DOCUMENT RESUME

ED 175 302 HE 011 256

TITLE Research into Higher Education: Processes and Structures. Information on Higher Education in Sweden.
INSTITUTION National Swedish Board of Universities and Colleges, Stockholm. Research and Development Unit.
PUB DATE 79
NOTE 354p.: Report from a conference in June 1978

EDRS PRICE MF01/PC16 Plus Postage.
DESCRIPTORS College Administration: *College Role: *Comparative Education: *Educational Research: *Foreign Countries: *Higher Education: *Innovation: Models: *Postsecondary Education As a Field of Study: Private Colleges: Public Education
IDENTIFIERS Europe: *Sweden

ABSTRACT

Taken from an international conference organized by the Swedish National Board of Universities and Colleges, the report consists of six overview papers, five reports from discussion groups, and a transcript of the concluding discussion. The conference was designed to allow an informal exchange between researchers and practitioners in the field of higher education, to achieve conceptual clarification and problem identification, to indicate policy implications, and to specify priorities for future research efforts. Introductory speeches by Hans Lowbeer and Lennart Levin are followed by papers on higher education as a system: "Process and Structure in Higher Education System (Tony Becher and Maurice Kogan) and "Contradiction and Innovation in Higher Education and Learning--A Research Proposal" (Ulf Himmelstrand). Papers in a third section address the role of higher education in society: "Higher Education and Society--An Analysis of the Relationships from a Structural and a Historical Point of View" (Yrjo-Paavo Hayrynen) and "Elite and Mass Higher Education--American Models and European Realities" (Martin Trow). The fourth section on research and development organization and planning contains the following papers: "Interactions Between Practitioners and Social Scientists in Research and Development" (Edmund Dahlstrom) and "Research and Development for Higher Education in Sweden--Some Conceptual and Policy Problems" (Rune Premfors and Bjorn Wittrock). The final section focuses on discussion of such topics as whether diversity and pluralism are possible in a unified higher education system. Appended are the conference program, a list of participants, and a list of publications. (PHR)

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ED175302

INFORMATION ON HIGHER EDUCATION IN SWEDEN

Research into Higher Education:

Processes and structures

Report from a conference in June 1978

HE 011 250

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National Board of Universities and Colleges 1979

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Sweden

CONTENTS

PREFACE 5

I INTRODUCTION

Introductory speech by Hans Löwbeer 7

Introductory speech by Lennart Levin 9

II HIGHER EDUCATION AS A SYSTEM

Process and structure in higher education system 11
Tony Becher & Maurice Kogan

Contradiction and innovation in higher education and learning - a research proposal 75
Ulf Himmelstrand

Reports from discussion groups:

Group 1 (rapporteur *Jan-Erik Lane*) 133

Group 2 (rapporteur *Bert Fredriksson*) 145

III ROLE OF HIGHER EDUCATION IN SOCIETY

Higher education and society. An analysis of the relationships from a structural and a historical point of view 155
Yrjö-Paavo Häyrynen

Elite and mass higher education: American models and European realities 183
Martin Trow

Reports from discussion groups:

Group 3 (rapporteur *Lars Owe Dahlgren*) 221

Group 4 (rapporteur *Kjell Rubenson*) 227

IV R & D ORGANIZATION AND PLANNING

Interactions between practitioners and social scientists in research and development 237
Edmund Dahlström

Research and development for higher education in Sweden. Some conceptual and policy problems 281
Rune Premfors & Björn Wittrock

Report from discussion group:

Group 5 (rapporteur *Rune Premfors*) 305

V CONCLUDING DISCUSSION 319

VI APPENDIX

Program 351

Participants 353

Discussion notes 357

Information bulletins 358

PREFACE

The Swedish National Board of Universities and Colleges organized, in June 1978, an international conference on "Research into higher eduacation: Processes and Structures". Participants in the conference, which took place at Rosenön, Dalarö (near Stockholm), were fifty researchers and administrators from Sweden and abroad, including some of the leading researchers in the field. The objective of the conference was to review Swedish research on higher education in the context of international research, and to have an informed discussion between researchers and practitioners in order to work out priorities for future research efforts.

The conference was planned and carried through as a part of the Swedish programme for research into higher education. This programme, which works in five major problem areas, is of a permanent character and is not directly tied to current reform work (cf. 'Appendix' for references to overviews of the research programme). Three of these areas were dealt with as themes for this conference.

Before the conference the participants received six overview papers particularly written for this occasion, two in each of the problem areas chosen. The authors introduced their papers for comments in plenary sessions although, on the whole, the conference was scheduled as group work, with the participants working in five groups, two for each of themes one and two, and one for the third theme. The group work was planned with the aim to achieve conceptual clarification and problem identification, to indicate policy implications, and to specify possible initiatives. On the last day of the conference there was a concluding plenary discussion.

This edited version of the proceedings of the conference, which now is made available to a wider audience, contains two introductory speeches, three sections - corresponding to the three themes - with overview papers and reports from discussion groups, and a transcript of the concluding discussion. There is also an appendix covering the conference programme, a list of participants and references to discussion notes and information bulletins used in the conference. Most of this material has been revised by the authors after the conference. This applies especially to the group discussion reports, where the rapporteurs were invited to develop those additional problem analyses and suggestions for studies, which they themselves wished to see in the conference report.

Stockholm, January 1979.

Eskil Björklund

I INTRODUCTION

INTRODUCTORY SPEECH

by Hans Löwbeer, Chancellor,
National Board of Universities and Colleges

In opening this conference and greeting the delegates, I would like briefly to comment upon the background of the conference and the reasons why you have been invited.

The National Board of Universities and Colleges (NBUC) is the central authority in charge of promoting and applying national policy on higher education and research. As public authorities in Sweden have a high degree of autonomy in the governmental system, the National Board has a responsibility also for developing policy and for clarifying different alternatives for the realization of policy.

In this light, resources for R & D for higher education, both on the central and on the local level, is directed towards finding practical solutions to immediate problems, but there is also a research program with more long-term goals and not directly tied to the current reform of higher education in the country.

For several years this research program has been working on problem areas which are vital for the understanding of the system of higher education. Here we are going to deal with three of these. This kind of conference is what we call a problem area meeting, where researchers and practitioners discuss complicated problems of the organization of higher education.

We have made this conference international because Swedish higher education research must be seen in its international context, and because it is a contribution to equivalent research being done in other countries. We therefore wish to present our research and our activities for the scrutiny of others within the international academic community.

In the recent past we have greatly increased our international contacts in the field of the politics of higher education and research. This has been of great benifit to us, and I therefore extend especially warm greetings to the foreign participants in this conference. We hope you will enjoy your stay with us and that you will find these few days rewarding.

The organization of higher education, its design and control is now an issue in the political debate in many countries, including Sweden. Knowledge about the organization of higher education and understanding of how it functions and under what conditions it can be improved, or disturbed, are therefore of primary importance. For these reasons I see this conference as a significant part of the activities of the National Board. Having said this I once again welcome all of you to this conference and hope we will all have clarifying and constructive discussions in the working groups and plenary sessions.

INTRODUCTORY SPEECH

by Lennart Levin, R & D unit, National Board of Universities and Colleges

Well, ladies and gentlemen, the program says, somewhat pretentiously, that I will give an introductory speech. Rather than that, however, I will just give a few brief comments, relating to the reports written for the conference, the purpose of the conference as we, the R & D people, see it, and finally to the working procedures to be used during this week. The purposes are to get the on-going research commented on and evaluated, as well as to get proposals for further research. A third purpose is to initiate a permanent dialogue between researchers and administrators. A sensible dialogue, hopefully, where both parties have to do a fair amount of listening, even at the expense of questioning their own arguments. Another hope, which I entertain, is that the discussions will generate some consensus concerning the conceptual apparatus that we use in the field of higher education. And in a more general sense I hope the conference will raise the fund of knowledge, which we are supposed to have in common. This consensus is not an easy thing to achieve, though. Yrjö-Paavo Häyrynen points out in his paper that, depending on whether you are a sociologist, a psychologist, an economist and why not an administrator, you perceive the same reality, in our case the field of higher education, rather differently. And, as we all know, it is far more difficult to reach consensus when it comes to value questions. Tony Becher and Maurice Kogan have nicely illustrated in their paper value systems prevailing at different levels of the system of higher education, and Ulf Himmelstrand is more or less urging reformers not to install their reforms without having an idea of the inner lives of university departments. That is to say, they, the administrators, ought to know a little about values prevailing at the basic levels of the system.

In 1975, that's about three years ago now, the University Chancellor's Office and its R & D unit organized another international seminar on Strategies for research and development in higher education. Some of you, who are with us here today, were present at that seminar as well. There are some differences between that conference, which was held on the auspices of the Council of Europe, and this one, which I would like to point out. At the 1975 conference, a number of papers and a number of sessions were devoted to learning and teaching strategies and other problems at what we generally call the micro level. This time we have chosen to concentrate on macro level problems, such as higher education as a system, the relation between higher education and society, and models for R & D work and its relation to planning. Although the contours of those themes are vague, and although there is a certain overlap between them, we have taken the liberty to place you in discussion groups according to them.

Returning to the question of objectives of our conference, I would like to mention that two of the papers, Edmund Dahlström's, on one hand, and Rune Premfors' and Björn Wittrock's on the other, try to analyse the policy, or lack of it, of the R & D program of the NBUC. Particularly the last paper is elegantly provocative in tone as well as in wording. I and my colleges at the NBUC look forward to stimulating policy discussions.

This is in fact the 15th so-called problem area meeting, which is organized in connection with the research into the higher education program of the NBUC. It is a commonplace that meetings of this kind raise more problems than they solve. It's good, however, to know that the problems will be raised by researchers and administrators of the highest esteem and reputation, and, which is perhaps even more important to us, researchers and administrators, whom we have had the privilege to know since long.

II HIGHER EDUCATION AS A SYSTEM

PROCESS AND STRUCTURE IN THE HIGHER EDUCATION SYSTEM

by Tony Becher and Maurice Kogan

Introduction and Summary

This paper is in three sections. The first puts forward a model of the higher education system. It distinguishes between four structural levels - central authorities, academic institutions, basic units and individual students and faculty members. The model also identifies two modes of functioning, the normative and the operational. The relationships between the different components of the model are discussed in terms both of day-to-day activity and of new developments.

The second section picks out certain aspects of the model for more detailed examination. The discussion begins by noting the resilience of basic units against externally-imposed prescriptions. This leads to a review of innovation at the level of the system as a whole, and the style of accountability which characterises it. Next, there is a contrasting analysis of innovation at the level of the basic unit and its characteristic style of and the part these can play in determining curricular patterns. Finally, the possible tensions between curricular accountability. The attention then turns to different value traditions within academic teaching and research, patterns and organisational frameworks are explored in terms of the different components of the model.

The final section examines some broader applications of the model. It begins with an analysis of the scope and limits of systemic planning and of the problems of governability in higher education. It concludes with a brief exploration of how far the model could be applied in a different area of public policy - namely the health services - and of whether the components of analysis are common between one sector and another.

I

A Model for Higher Education

The term 'model' has come to have a variety of different uses. We shall employ it here in a non-technical sense, as a straightforward - but necessarily and deliberately simplified - set of categories for thinking about systems of higher education and looking at the relationships between their components. These categories, components and relationships can be compactly summarised in diagrammatic form and it is the resulting diagram to which we will refer as our model. We ascribe no special powers and properties to the model itself, other than those of conveniently presenting abstract ideas in concrete visual terms. Its function is not to reveal new truths, but rather to portray familiar truths in a new and - we hope - illuminating way.

The Structural Levels in the System

Having made this necessary disclaimer, we can now turn to the business of assembling the model itself. In the discussions which follow we distinguish between four familiar elements in the structure of any higher education system. The first is the central level, involving the various state or national authorities who are charged with overall planning, resource allocation and the monitoring of standards. The second level is that of the individual institution, as defined in law (through its charters or instruments of governance) and by convention (through its various decision-making bodies).

We have called the third level the 'basic unit', because its precise nature varies between different institutions. In many traditional universities, it corresponds with subject-based departments; but in some newer ones it may be a more broadly-constituted 'school of study'. In other institutions again, the basic unit may be defined by a course team - namely an interdisciplinary group of teachers who collectively provide a major component of the undergraduate curriculum. The main characteristics of such basic units are that they have academic responsibility for an identifiable course or group of courses, that they have their own operating budgets (and some discretion in disposing of them), and that they exercise some element of choice in the recruitment of professional colleagues (and often also of students). They may in certain cases engage in collective research activities, but this is far from being a defining feature.

Finally, at the level of atomic structure, the system is composed of individuals - teaching staff, researchers, students, administrators and ancilliary workers. We shall focus in our discussion mainly on the teachers, as they normally play the main role in shaping academic, institutional and curricular policy, though we shall also make occasional references to students.

In the first stage in the composition of the model, then, we have merely identified four elements representing the different structural levels within the system:

Figure 1 - The Structural Components of the Model

Individual	Basic Unit	Institution	Central Authority

Two Modes, and the Development of a Matrix

The second stage in the process depends on a less familiar set of distinctions. It separates two components in the everyday life of the academic world which are not in practice sharply distinguished. The first of these relates to the monitoring and maintenance of values within the system as a whole. It might be designated, briefly, as the normative mode. The second, in contrast, refers to the business of carrying out practical tasks at different levels within the system. It could be labelled as the operational mode.

Although these two modes obviously interact - and we shall go on, towards the end of this section, to discuss the nature of their interaction -their characteristics can be readily marked off one from another. The contrast is related to the difference between what people actually do - or what they are institutionally required to do - and what they count as important. The distinction also has something to do with the familiar differences between fact and value and between everyday practice as defined by law and ideal practice as defined by morality. However, the best way to draw out the differences between the two modes is perhaps within the context of discussing the model itself in more detail.

Allowing still for a certain sketchiness in the designation of the normative and operational components, we now have the basis of an eight-cell matrix which marks off the two modes in relation to each of the four structural components:

Figure 2 - The Eight Elements of the Model

	Individual	Basic Unit	Institution	Central Authority
Normative	1	2	3	4
Operational	5	6	7	8

The Cells of the Matrix

The next step, obviously, must be to fill out the eight elements or cells of this matrix in sufficient detail to make it possible to discuss the interconnections between them. This task can best be tackled by taking the eight numbered elements in turn and commenting on the nature and implications of each.

Normative Mode

(1) The main characteristics at the individual level in the normative mode are an emphasis on fulfilling personal wants and meeting personal expectations, linked with a general concern to maximise job satisfaction. These might be called intrinsic features of the element in question. However, there is also an extrinsic characteristic in that most individuals derive some sense of support from the working group to which they belong, and reciprocate this by subscribing to the group's norms. (As we shall see, the combination of intrinsic and extrinsic features also occurs at the other levels of the system).

(2) The basic unit, viewed in its normative mode, is mainly taken up with maintaining the group norms and values which give it its sense of coherence. It operates the collective credit system through which members of the immediate professional group, and the wider network of comparable groups in other institutions, obtain rewards, advancement and recognition. Thus, for example, a history department in a particular university is concerned to endorse the canons of historical scholarship and codes of good professional practice in the subject. In doing so, its own departmental reputation will be preserved and enhanced, and in addition its individual members may the more easily gain promotion in other history departments in other universities, whether at home or abroad.

But at the same time, in the interests of survival, any such basic unit will also need to fall in with the extrinsic demands of the parent institution, which will not necessarily coincide with its own particular sectional concerns.

(3) Academic institutions are predominantly concerned, in their normative aspect, with setting and monitoring rules rather than with making substantive judgements of quality. In other words, their role emerges most clearly in the maintenance of 'due academic procedure'. They seek to ensure that the proper processes are followed by basic units in relation to academic appointments, the use of funds, the selection of students, the protocols of assessment and the like. Institutions as a whole do not normally (though there are, of course, notable exceptions to this) lay down collective criteria for excellence. Rather, their tendency is to monitor the normative ambitions of basic units and to ensure that these conform to the shared interests of the group. In many higher education systems, institutions also have an extrinsic concern with meeting the requirements of central authorities, and of ensuring that the range of courses they provide matches the demands of applicants and employers.

(4) Just as academic institutions monitor their basic units, so too the central authorities have the normative task of monitoring the standards of their constituent institutions. They are also, however, expected to identify the extrinsic requirements on higher education of the economy and of society at large. Assuming that they succeed in this slippery task, they are then expected to perform the even more remarkable achievement of changing the system itself to match such requirements. Their possible means of doing so are reviewed in (8) below.

At this point, we might conveniently summarise the elements in the normative mode as follows:

Figure 4 - The Elements in the Normative Mode

Individual	Basic Unit	Institution	Central Authority
Intrinsic: job satisfaction; personal wants and expectations.	Intrinsic: maintaining peer group norms and values.	Intrinsic: maintaining academic regulations.	Intrinsic: maintaining institutional standards.
Extrinsic: subscription to group norms.	Extrinsic: conformity with institutional requirements.	Extrinsic: conformity to central demands.	Extrinsic: meeting social and economic desiderata.
(1)	(2)	(3)	(4)

Operational Mode

(5) Turning now to the operational mode, it is easy to see that at the individual level the main requirements are those of occupational tasks. Such tasks are laid down mainly by the basic units, and comprise (forexample) the teaching and/or research commitments of staff, and the learning demands and subsequent assessment exercises of students.

(6) In operational terms, the key function of the basic unit is to define the actual nature and content of the unit's everyday practice. It is thus concerned mainly with issues of the curriculum, and in some cases also of research. It has to specify the working programme in sufficient detail to make it capable of implementation, and to translate the result in terms of individual tasks.

(7) The institution seems relatively stronger in its operational than in its normative component. Its basic function is one of maintenance of established processes. However, it also has an important part to play in terms of forward planning, and in ensuring that national or local policy decisions are effectively put into practice. It carries out these tasks mainly by the differential allocation of resources between basic units.

(8) The central authorities are operationally responsible above all for negotiating the recurrent funds made available for higher education by the national or state legislature,

and for allocating them between their constituent institutions. They are also in many cases charged with approving proposals for new developments or laying down specifications for new courses. By these means they can to a greater or lesser extent carry out their normative functions, as outlined in (4) above.

To summarise again:

Figure 5 - The Elements in the Operational Mode

Individual	Basic Unit	Institution	Central Authority
Work required: research/ teaching, learning.	Operating process: curriculum and/or research programme.	Maintenance of institution; forward planning; implementing policy.	Negotiation and allocation of central resources; approval of new developments.
(5)	(6)	(7)	(8)

Relationships Between Elements

We are now almost in a position to complete the model. Before we can do so, however, it remains to say something more about the relationships between adjacent elements in the matrix which we have just discussed. There are, of course, two sets of relationships - those which are horizontal (between elements (1) and (2), (2) and (3), and so on), and those which are vertical (between elements (1) and (5), (2) and (6), etc.). We shall look at them briefly in turn.

It has been implicit in our discussion of the normative mode that all the relevant relationships involve appraisal or judgement. Thus basic units relate normatively to individuals in terms of matching an individual's standards against the values of the group (elements (1) and (2)). Institutions and basic units are linked in terms of formal procedural judgements in which the units must be seen to conform to institutional codes of practice (elements (2) and (3)). National authorities carry out their monitoring function in relation to institutions by evaluating the general effectivness. of their basic units and by appraising their professional competence. (Elements (3) and (4)).

In comparable ways, all the main relationships in the operational mode can be characterised in terms of the allocation of resources, responsibilities and tasks. The individual's activities are set out in terms of the operational requirements of the basic unit to which he or she belongs (elements (5) and (6)). The basic unit is related operationally to the institution in terms of the specification of its budget and the institutional requirements on its curricular and/or research programme s (elements (6) and (7)). Each institution, in its turn, is dependent on the approval by the central authorities of new types of course provision and on the allocation of funds from the total pool available for the system as a whole (elements (7) and (8)). This is so even where the central authority relies on academic peer assessments to guide its decisions: the final decision nevertheless rests with the authority itself.

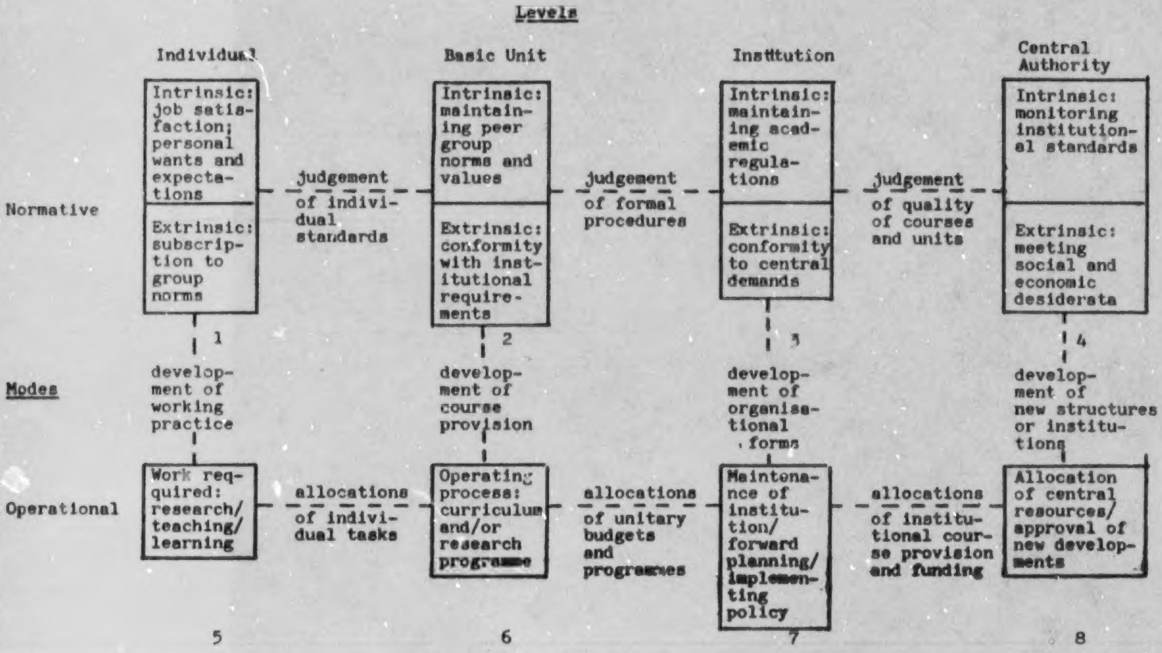
The vertical relationships are different in character. Where the horizontal links ensure normal day-to-day working, the vertical involve possible departures from convention. As long as the normative and operational modes are in harmony with one another, the system as a whole can be said to be in dynamic equilibrium. But when they become significantly out of tune, some kind of development has to take place to restore the possibility of normal functioning. We shall develop this notion in more detail in Section II below. For the present, it may be sufficient to note that, where disharmony occurs, the normative level usually exercises dominance over the operational. This is simply a particular application of the general rule that, where there is a clash between what people do and what their basic values are, then the values will tend to affect the actions more strongly than the actions affect the values.

Looking at the different relationships briefly in turn, we have noted that they are all characterised by developmental change designed to restore a sense of harmony and equilibrium. As far as the individual level is concerned (elements (1) and (5)), the emphasis is on developments in working practice - for example, changes in a student's learning habits induced by changes in his or her beliefs; or changes in a researcher's emphasis and approach brought about by some new apprehension of the subject; or changes in a teacher's techniques generated by a new pedagogic ideal. The interaction between the normative and operational modes at the level of the basic unit (elements (2) and (6)) will perhaps most often be characterised by developments in curricula, as group values develop in such a way as to call into question current activities - a recent example would be the effect on undergraduate courses of the changing conceptions of geography as a discipline. At the institutional level (elements (3) and (7)), the characteristic product of a tension between norms and operations is some change in academic or administrative organisation, designed to bring what is done more closely into line with what is held desirable. The comparable task at the level of the central authorities (elements (4) and (8)) - namely matching the provision within the system as a whole to major changes in the demands of society and the economy - often has to be tackled by a major structural reform (as in Sweden) or by the establishment of a series of new institutions (as in Britain).

The Completion of the Model

The various considerations brought forward so far can be effectively summarised by presenting them in graphic terms. The model which we have now set out contains no features which have not already been discussed, but its relatively compact nature will make it easier to explore some new issues in the subsequent sections of this paper. As will be seen, the relationships between adjoining elements are characterised by dotted lines, rather than by the customary directional arrows. This is because, in Section II, we propose to consider more fully the directions and relative strengths of some of these relationships, and to suggest that the influence does not always flow in the expected directions.

Figure 6 - The Completed Model


Levels
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Intrinsic: job satisfaction; personal wants and expectations
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Extrinsic: conformity to central demands
judgement of quality of courses and units
Intrinsic: monitoring institutional standards
Extrinsic: meeting social and economic desiderata
1
2
3
4
development of working practice
development of course provision
development of organisational forms
development of new structures or institutions
Work required: research/ teaching/ learning
allocations of individual tasks
Operating process: curriculum and/or research programme
allocations of unitary budgets and programmes
Maintenance of institution/ forward planning/ implementing policy
allocations of institutional course provision and funding
Allocation of central resources/ approval of new developments
5
6
7
8

II

Aspects of the Model Examined

The Resilience of Basic Units (elements (2) and (3))

One of the noticeable features of higher education, which our model helps to underline, is the resilience of basic units in the face of institutional pressure. This should not be altogether surprising, since the basic unit has been defined as the smallest viable grouping in any academic institution, working within its own budget and, to a sizeable extent, its own terms of reference. It represents a coherent academic ideology, in a way that larger groupings (say the entire Arts Faculty) seldom do. It has a key role in the selection of its own members and in determining the curriculum it offers. What is more, the basic unit usually forms part of a wider peer group network outside the bounds of its parent institution - a network within which individual and collective reputations are established and prospects of mobility and promotion are opened up.

Basic units serve not only as an immediate and direct means of academic identity for individual students and staff, but also as vehicles for the preservation and development of professional expertise. In this latter respect, they occupy a powerful - though not impregnable - position in the political line-up of the institutions to which they belong. It is not easy for an institution as a whole to call for this or that modification of policy or practice in one of its basic units. In many cases, the unit in question will have the monopoly of relevant specialised knowledge and will be able to respond by rejecting the demand as ill-informed, irrelevant or inappropriate. In a case of conflict it will be more easily able to close its ranks than will the rest of the institution, with its ideologically diverse interest groups. In the last resort, however, the institution can depend on the judgements of those members of staff whose expertise, though different, is closely allied to that of the basic unit in question; or on the views of outside authorities in the same academic field. Where the institution's proposals are upheld, it will have the means of implementing them through its powers to control the unit's budgetary allocations.

Such conflicts between basic units and institutions are rare, and tend to be confined to cases where the unit has fallen badly out of line both with institutional policy and with contemporary professional practice in comparable units elsewhere. For the most part, as our model suggests, the institution's role is limited to insisting on the observance of correct forms of procedure, as opposed to attempting to appraise the standards of excellence or monitor the guiding professional norms of its basic units. The senior members of the institution can only directly affect the normative mode when a new head of a basic unit is to be appointed.

The relative weakness of the institution in this respect is underlined by the activities of the central authorities. It is they who can be called to account for the quality of the system as a whole : and this has to be defined primarily in terms of the available course provision and o f the competence of the basic units. So the central authorities must quite properly come to some view of the merit and worth of the various units and their programmes, often depending for such a view on the judgement of specially-constituted expert panels. The process of appraisal naturally tends to by-pass the institutions themselves, thus reinforcing the concept of such institutions as little more than holding companies for collections of basic units.

Returning to the question of the resilience of the units to pressure from above, it can be remarked that their position is given added strength by the underlying continuities of the academic enterprise. They are protected by the appeal to proper processes of inquiry and the need for validated evidence, as against the use of superior force. They can trade on the tradition of deferring to expert knowledge as opposed to using arguments from expediency. And, ultimately, they can depend on a separate structure of professional values and rewards which is national, if not international, in scope. This structure tends to be slow to change: it provides a convenient court of appeal in the face of institutional or central demands for changes of policy or practice. Although informal in nature, it includes identifiable institutions with which basic units are in more-or-less formal relationship, such as research councils (governed by peers), learned societies and journals which adjudicate publication standards, as well as professional associations.

The Limitations of Top-Down Innovation (elements (3) and (4))

Having looked briefly at basic units in relation to pressures for change from above, it may be useful next to consider the role of central authorities in bringing about new developments within the system as a whole. As we have already noted, central authorities often see it as part of their function to monitor the nature and quality of the course provision of basic units. However, they do not in most higher education systems exert any direct influence over the units' activities, and can at most exercise an ability to promote or reject new curriculum schemes, and proposals to establish new academic groupings. A very large part of the system's total resources is inevitably taken up with continuing commitments such as staff salaries and basic running costs, which can only be varied gradually over a period of years. This restrains the ability of the central authorities to cause rapid change, though they hold the ultimate power over the development of institutions and basic units.

The task of the central authorities is not an enviable one. They are called upon to justify the activities of the higher education system in terms of the needs of society and the economy. However, as we shall argue more fully in Section III, the basic units which have control over the system's core activities of teaching, learning and research have very different values. These units are not readily persuaded to abandon their professional loyalties in favour of more general demands from above. As a result, the authorities have to find other and less direct means of dealing with the situation.

One common way of attempting to bring about a match between central policies and institutional activities is through some measure of structural reform. This sets out to affect the pattern of institutional power within the system and to create new activities which are seen to be more socially desirable or more economically worthwhile than those which already exist. Thus, in the UK the government has over the past decade designated 30 existing technical colleges as polytechnics, giving them the role of teaching more industrially-oriented degree courses and developing a more socially relevant emphasis than the universities. The major structural changes in Sweden triggered off by the U68 reforms provide another obvious case in point.

A closely related strategy is to establish totally new institutions, designed to break with traditional ways of thinking and to develop new professional norms. Such new foundations are often, as in the case of the University of Sussex in the UK, or of Roskilde University in Denmark, expected to serve an exemplary function and to reform the values and influence the practice of existing institutions. This strategy has proved with a few notable exceptions to be of doubtful value, and is in any case difficult to employ except in times of expanding numbers and plentiful budgets.

A third approach, which seems to be rarely adopted, is mentioned here because it is suggested by a consideration of the model. The type of academic activity which really matters is the curriculum programme, together with its associated research. Its nature is largely defined at the level of the basic unit. We have noted that the main determinant of effective change at this level is the value system maintained and sanctioned by the relevant professional peer group. It would at least be open to the central authorities to seek in some way directly to influence the climate of opinion within the peer group or groups concerned. Thus, for example, if society is deemed to need more graduates with expertise in the combination of languages and marketing, the influential academics in each subject area might be commissioned to work out ways of promoting such developments. Similarly, a greater emphasis on basic engineering skills might be promoted by persuading the professional agencies to offer some special recognition to graduates from courses which developed this emphasis.

A fourth possibility, which would affect the basic unit in terms of its powers of institutional survival, would relate to a manipulation of student numbers in favour of those units adopting a centrally-approved policy and against those failing to do so. For instance, differential grants might be awarded to students taking a certain type of programme; or some form of numerus clauses might be imposed on certain units as against others. This could well be seen as a move towards central dictatorship; and so be open to attack as a breach of academic freedom. Even so, in somewhat more generalised form it may be on the way to being adopted within the UK system, in terms of offering financial and occupational incentives to students of 'shortage' subjects.

The main disadvantage of introducing structural change or creating new institutions as a means of promoting academic reform is that the consequences are indirect and often unpredictable. It may seem an obvious solution for central agencies grappling with unresponsive groups of academics, because the ability to modify institutional forms is one of the few direct powers which such agencies can exercise. But the end result in terms of an operating programme may often be quite ineffective in meeting the need which gave rise to the change in the first place. For example, in the UK the serious miscalculations about the birth rate, and hence about the number of new teachers required, has led in recent years to the merging of numerous colleges of education with polytechnics (alongside the closure of several other colleges). The rationale was that the combined institutions would offer a liberal arts element alongside the existing technological one. So far, however, there has been little evidence of effective joint programmes, and the morale of the college staff has deteriorated to a noticeably low level. There was surprisingly little debate about the possible alternative of encouraging the individual colleges to work out their own solutions, on the basis of attracting enough students on non-teacher courses to remain viable. Yet this could well have been a less damaging, and no more costly line of action. Another less drastic case was the setting up of the polytechnics themselves. They were supposed to perform a number of distinctive functions which would mark them off from the universities. But predictably, the professional norms of their specialist basic units were the same as those of other academic groups. Their academic staff, too, looked outside the institutional structures for their professional identity. So, over the years, as a result of a steady process of 'academic drift', the actual difference between their curriculum programmes and those of the universities have become blurred and difficult to discern.

In terms of our model, it might be said that horizontal pressures are less effective than vertical ones. A successful change to the system must succeed in modifying the norms which condition and define the relevant operations, rather than merely in altering the structures which embody those operations. If a central agency becomes too concerned with structure at the expense of attending to substance, the result is likely to be a simplistic 'black box' approach, in which a concern with what is really happening within the private life of the system is sacrificed to an uninformative and uninformed review of its public postures. And once this happens, the result is a sterile form of 'product accountability' in which success is gauged by quantitative output measures without any sensible regard to the quality of the ongoing process.

The Potentialities of Grass-Roots Innovation (elements (1) and (2)

It may be useful to look next at the direct inverse of the process of 'top-down innovation' which we have just been discussing. Returning to the model, our attention now needs to shift to the left-hand side, in which the individual student or staff member interacts with the basic unit to which he or she belongs.

In practice, some of the most far-reaching and rapidly-disseminated changes within higher education have taken place as a result of the enterprise and inventive imagination of individual teachers and students. Many of the innovations, for example, documented by the Nuffield Higher Education Group in the UK between 1972 and 1976 arose as a result of staff appointments at senior level, usually from outside the institution concerned. The arrival of a new member of the basic unit with novel ideas, and the ability to persuade colleagues to try them, resulted often in a significant shift of group norms. Where a change in curriculum or teaching approach could be seen as effective, the word often spread through the wider professional network, resulting in a more general adoption of the new practice.

Grass-roots changes of this kind include, among the more familiar examples, the adoption of student projects as a partial substitute for laboratory exercises in science and engineering subjects; the development of self-study techniques based on the ideas of S. N. Postlethwait, or F. S. Keller; and the growing interest in methods of small group work in both arts and science subjects.

Student-initiated change has been particularly noticeable in relation to assessment methods and to patterns of curricular choice. Sometimes the student influence is direct, as when the widespread protest movements of the late 1960's gave rise (among other things) to demands for a modification of the traditional reliance on formal examinations. In consequence, there are now very few UK universities which do not offer one or more forms of interim assessment in addition to single 'finals', though few have abandoned the final examination altogether. The direct influence of students is also responsible for a number of courses in which the curriculum content is itself open to negotiation between students and staff.

However, an even more powerful effect on the values and practices of basic units is exercised by indirect student influence. Student numbers provide the institutional currency by means of which such units survive. If numbers increase, a case can be made for more staff, bigger budgets, and a greater degree of power and influence. If they decrease, there is a danger of eventual reductions in staff and a decline in general esteem. So if the demand for entry to a particular unit looks like falling off, the potential clientele is anxiously reviewed and its wishes - real or imaginary - taken into account in redesiging the curriculum.

This process can be clearly observed in contemporary British universities in departments of classics (among other examples). The solutions adopted in the face of falling student demand are varied and ingenious. The two most common are to develop new non-linguistic 'classical civilisation' courses as part of a general arts degree, and to offer special crash courses in introductory Greek to enable those who did not study the subject at school to join a modified degree programme. Needless to say, such activities would have been totally unacceptable even ten years ago: the state of the market has transformed professional values in a way that no structural manipulation could ever have hoped to do.

The advantages of grass-roots change over top-down innovation are evident enough to call for no more than a brief rehearsal here. The influence of members of the peer group - colleagues who have the same basic values, share the same academic traditions, and do the same kind of job - is obviously more direct than that of administrators in some remote central institution. If one or more such colleagues come up with worthwhile ideas for improving practice, they will at least be taken seriously. Equally, the students (both existing and potential) who justify the very existence of any basic unit have clients' rights which can be exercised by direct pressure or indirect boycott.

It is the basic unit which provides the staple commodities of teaching and research within the higher education system. It therefore has a relatively strong position as against the institution (which, as we have suggested, can be little more than a holding company), and even against the central authorities (which are necessarily remote from day-to-day concerns and taken up with often irrelevant structural issues). But if the basic unit is resilient against pressure from above, it is relatively open to pressure from below or within. As we have seen, it is capable of quite rapid and far-reaching changes stemming from peer group or client interest. The main drawback is, of course, the patchy and unpredictable nature of such grass-roots innovations.

One final advantage of this type of change must be remarked. Attempted changes in the operational mode by manipulations in the structure - as we saw earlier - are prone to give rise to a 'black box' view of the system and to lead to a simplistically output-centred and numerical accountability. In contrast, processual changes of the type we have been considering have a direct effect on academic activities and values. Any attempt to evaluate them will involve a concern with what actually happens in the academic enterprise, and will consequently generate a mode of accountability which emphasises the quality of processes rather than merely the quantity of products.

Relevance and Validity Within the Curriculum (element (2))

So far, we have looked at various features of the basic unit, and considered its interactions with other levels in the system. In doing so, we have avoided any detailed consideration of what kinds of activities it generates at the operational level, or what range of values it embodies at the normative.

There is, however, one broad distinction which it may be useful to introduce because it serves to highlight two basic and long-standing academic traditions. It can be characterised in a number of different ways, but we shall start by taking the contrasting notions of validity and relevance as determinants of curriculum approach. The tradition which emphasises validity as a prime value tends, appropriately enough, to pay a high regard also to original research and to the generation of new knowledge in the subject field. Teaching is evaluated in terms of the efficient transmission of valid and established knowledge to a largely passive and receptive audience. The curriculum is defined in terms of content and coverage rather than in terms of methodology, or of meeting the learners' needs. In contrast, the tradition which emphasises relevance as a general goal - which sees the academic enterprise as being in some measure socially-determined, rather than defined by purely scientific or professional considerations - has a predictably different set of priorities. It is as much concerned with the critical analysis and appraisal of existing ideas within a given field as it is with 'pushing back the frontiers'. That is, it values scholarship and knowledge regeneration at the expense of research and knowledge generation. In this tradition, teaching is seen as a transaction between students and staff, in which new ideas and interpretations have to be developed in the context of a growing understanding by the students of what the subject is about. Curriculum content is relatively unimportant - as indeed it must be, when determined by the test of its appropriateness to the learners' needs and its wider social relevance. The curriculum is shaped predominantly by a concern with exemplifying processes of enquiry, critical argument and validation - by enabling students to appreciate the characteristic methodology of the field in question, rather than requiring them to master its contents.

It may be helpful to set out these contrasts in tabular form. It should of course be emphasised that, in polarising the two traditions of validity and relevance as we have done, we have inevitably drawn the picture too starkly. Although some basic units give a heavy emphasis to validity, and some are almost exclusively concerned with relevance, the large majority combine elements of both. So the two contrasting characteristics must be seen as caricatures, rather than as faithful reproductions of reality. Like other caricatures, they aim by their very exaggeration to bring home some important truths. Their test is their recognisability. We hope that those who reflect upon our two stereotypes will be able to find approximations of them in their own experience.

	Tradition of Validity	Tradition of Relevance
Academic Emphasis:	Knowledge generation	Knowledge regeneration
	Primacy of research	Primacy of scholarship
Concept of teaching:	Knowledge transmission	Knowledge transaction
	Passive student clientele	Active student clientele
Concept of curriculum:	Content predominant	Methodology predominant
	Coverage scientifically determined	Coverage socially determined

The coexistence of these two traditions within the same basic unit, and of differing degrees of allegiance to them within the same institution, can give rise to problems both at the level of the individual and at the level of the institution itself. Within the tradition of validity, specialisms tend to be narrowly defined and to generate a hierarchy in which the more expert hold dominion over the less expert. Professors know better than lecturers; both are authorities over their students. The tradition of relevance leads to more collegial structures, in which the professor is only primus inter pares: anyone (including students) can have a good idea or make a worthwhile academic contribution. Not only are the group norms different within basic units with different allegiances: the notions of what constitutes proper academic procedure and what are legitimate individual wants and expectations will differ as well.

For example, students within the strongly validity-based units will tend, because of the strong concern with curriculum coverage, to be taught for long hours and to have their work frequently assessed. Students from mainly relevance-based units, on the other hand, will tend to be given considerable encouragement to work independently, and their burden of assessment will be relatively light. The discrepancies between the two may be used in times of student militancy as a bargaining counter in questioning work loads. Similarly, staff in validity-based units will often be subjected to a heavier pressure in terms of research productivity, or required to teach for longer hours, or both, than those in relevance-based units. They too may begin to compare themselves with their more apparently fortunate colleagues when salary negotiations are in view, or when the scope for promotion is limited by a period of minimal growth.

At the institutional level, the differences in values and priorities may well result in clashes over proposals for expansion or procedural change. For example, a new and expensive development designed to further some specialised academic enquiry within a validity-based unit may be contested in terms of its lack of social relevance. In a similar way, a scheme within a relevance-based unit to allow greater student involvement in the assessment process may be rejected because of its failure to meet the norms of academic validity.

It may be noted that these somewhat crude stereotypes have a certain amount in common with C. P. Snow's 'Two Cultures', though they can certainly not be equated with science and technology on the one hand and arts and social science on the other. They cut across the boundaries, not only of subject-matter and type of institution, but also of different phases in the history of higher education. Indeed, one might say that every period embodies some compromise between the two traditions. At some stages, as in the medieval universities, the tradition of relevance might be strongly dominant. At others, as in the reforms first inspired in Germany under Humboldt, the ideal of scientific validity may gain ascendancy. But for the most part, there is an uneasy balance struck between them, with the actual point of equilibrium moving in one direction or another over time.

Curricular Patterns and Organisational Frameworks

(elements (6) and (7))

We turn, finally, in this review of particular aspects of the model, to a scrutiny of the interaction between the basic unit and the institution in their operational modes. We shall seek to establish that the characteristic pattern of a unit's curriculum pattern needs if possible to be matched by the type of academic organisation which its parent institution adopts: and we shall end by considering one specific example of mismatch.

Just as we presented an artificially-sharpened distinction between two value traditions, we now propose to offer a highly-simplified sketch map of four basic curricular patterns which can be found in contemporary higher education. It may be helpful to contrast these along two different dimensions, the first of which relates to the nature of the subject boundaries, and the second of which characterises the curricular content within those boundaries (those familiar with Bernstein's work on classification and framing will recognise the debt we owe to his ideas).

The dimension concerned with subject boundaries has two contrasting qualities, namely closed and permeable.

By a curriculum with closed boundaries we mean one in which the subject-matter is strongly predetermined by disciplinary norms, and where it is not possible to bring in extrinsic considerations, however apparently relevant. By a curriculum with permeable boundaries we mean one in which such importations of new and apparently relevant ideas are regarded as legitimate.

There are also two contrasting qualities which apply to the dimension concerned with curricular content: the first is cohesive and the second discrete. By cohesive content we mean subject-matter which is closely inter-connected and where there has been a clear attempt to achieve conceptual unity. By discrete content we mean the opposite, namely subject-matter in which the interconnections are not made apparent and where the conceptual links, if any, do not seem to be counted as important.

A first-stage summary of these distinctions would be as follows:

Figure 7 - An Outline Matrix of Curricular Patterns

		Subject Boundaries	
		Closed	Permeable
Curricular Content	Cohesive	1	2
	Discrete	3	4

Next, we shall identify the curricular patterns which best correspond with these four different pairs of characteristics. The first cell in the matrix, representing closed boundaries and cohesive content, is easy enough to allocate, since these are the familiar characteristics of single-subject specialist curriculum programmes. The third cell, similarly, defines a fairly common species of curricular pattern, namely that in which a number of separate and self-contained thematic topics are pursued simultaneously, but with no special attempt to relate them to one another. Broadly-based 'foundation courses', joint honours programmes and unit or modular degree schemes all fit into this pattern.

The second cell represents a relatively more recent development, namely the emergence of interdisciplinary courses which are area-based or problem-based rather than related to conventional disciplines (examples would include courses in Urban Development or European Studies). In such courses, a considerable effort is made to develop a sense of unity between the various disciplinary components: but the boundaries of the course remain permeable to new elements, provided only that these have some acceptable degree of relevance to the central theme.

Finally, the fourth cell seems best to correspond with some of the more recent conceptions of open learning, lifelong study or education permanente. It implies an ability for the student to select individual items of curricular content at will, but not to be subject to the discipline-based restrictions that characterise modular degree programmes. The curriculum of the 'University Without Walls' in North America may provide perhaps the best-known example of this pattern. (The Open University in the UK does not, since it operates in an interdisciplinary fashion at the foundation level and in a modular fashion at the more advanced levels).

The completed matrix, with examples of curricular patterns included, therefore emerges as follows:

Figure 8 - Some Varieties of Curricular Pattern

		Boundaries	
		Closed	Permeable
Content	Cohesive	Single-subject specialised degrees	Interdisciplinary courses
	Discrete	Modular or unit schemes	Open learning programmes

It now remains to consider what are the most appropriate organisational frameworks to match these different curricular patterns and to look briefly at the possible consequences of a mismatch.

As far as an ideal framework can be found for a single-subject degree, it is surely the traditional specialist department. This offers a complete correspondence of interest between academic organisation and teaching commitment, with the department identified in terms of the specialised subjects it teaches and its staff and students sharing the same clear sense of discipline-based identity.

Unfortunately, however, the departmental structure is less appropriate to a modular degree scheme. Individual departments will often tend to compete amongst themselves for student numbers, using a variety of ingenious, but not always educationally productive tactics. They may also introduce unnecessary rigidities in the system by insisting on a series of prerequisite courses, or complicate matters by keeping to their own marking schemes. In practice, those UK institutions which have gone furthest in the direction of modularising their courses have tended to move to a structure in which course teams provide the organisational basis for teaching and subject groups provide the basis for research. Each course team consists of all the staff involved in teaching a given unit or module. Its success is determined largely by the extent to which they work effectively together. An individual member of staff will normally belong to two or three course teams, but in most cases to only one subject group. The course teams often have their own budgets, so that they form in effect a basic unit in the terms earlier defined.

Just as the traditional academic structure has had to be modified to accommodate modular degrees, so too it has proved clearly unsuitable to interdisciplinarity. The problem stems from the possessive tendency of discipline-based groups to lay unique claim to certain areas of knowledge and to close off attention to what lies beyond their own professional boundaries. This parochialism is exactly what the advocates of interdisciplinary courses set out to avoid. In general, they can only succeed if they manage to by-pass or break down the departmental framework. This has commonly been done in UK universities by reorganising the whole structure of the institution in terms of schools of study. These schools are then taken to constitute the basic units within the institution, each devoted to the broad theme which forms the subject-matter of its own degree programme or programmes. Thus one such school might be designated English and American Studies; another Environmental Science; and so on. The sectional interests of particular subject disciplines are - in theory, if not always in practice - subjugated to the wider requirements of interdisciplinary teaching and research.

Finally, open learning programmes of the type outlined earlier must clearly call for a much more flexible and open structure than any of those so far discussed. Indeed, they appear almost to transcend traditional notions of structure, much as some modern painting, poetry and music would seem to do. But in practice they do of course involve the creation of relatively informal and shifting networks of co-operating institutions and individuals. They rest to a considerable extent on the mutually acceptable definition of credits, and on their transferability and cumulation over time. Programmes of this kind, though relatively new, seem to represent a new area of academic growth. They are not so much extra-institutional as inter-institutional. Although they may well in the long run modify existing organisational forms at the level of the basic unit, their immediate impact has been on the relationships between different institutions and the structure of the system as a whole.

We have attempted here to show how different curricular patterns call for different types of academic structure, often modifying the way in which an institution's basic units are defined. In terms of our model, a significant change in the predominant academic values of the peer group leads to a comparable change in the nature of the operating process at the level of the basic unit. This change conflicts with the existing mechnisms at the institutional level, and leads to an imbalance between the normative and operational modes. This has eventually to be adjusted by appropriate organisational reform.

Since the discussion has so far been largely abstract, it may be of interest to conclude with a concrete illustration of the type of problem we have been discussing. It is extracted from an account by Professor D. R. Wightman of an attempt in the mid-1970's to develop a degree course in International Studies at the University of Birmingham.

> 'The Birmimgham promoters submitted their scheme to the faculties in the confident expectation that each of them would reject it on the grounds that it required interfaculty co-operation. The reaction was not unwelcome. Had any of them adopted it as part of their own development plan, its chances of success would have been reduced. Members of the team in other faculties would have felt that it no longer belonged to the team and departments in the adopting faculty would have seen it as a serious threat to their own claims for resources. The exercise served its purpose in demonstrating the inflexibility of the machinery of academic planning. None of the faculties seriously questioned the academic merits of the scheme; they simply could not digest a horizontal concept which cut across their boundaries.
>
> What the university lacked, in other words, was any mechanism for receiving and evaluating inter-faculty proposals that amounted to more than a combined degree between two fields of study. After the usual cumbrous round of consultations, a central advisory panel was set up for the purpose. It was this body which received and ultimately recommended a detailed scheme for the development of international studies. An evaluation by academics of standing, who were not themselves directly affected by the scheme, and therefore had no reason to feel threatened by it either, greatly improved its chances of being accepted. The faculties were given another opportunity to comment on the academic merits of the scheme, but not on any other aspect of it, before it was finally approved by the Senate. .....
>
> The Senate accepted that a degree programme based on several subjects could not be administered through any of the existing departments. A School of International Studies was therefore established with its own independent Head. It would provide a home for the students entering the degree and give them a sense of belonging to an organised part of the university . ..... The school would have a small number of full-time staff, but largely depend on the teaching provided by the associated departments. But the special courses provided by new staff appointments to the School would also be open to students of the associated departments, thereby compensating them for their contribution to International Studies. The associated departments and the School will be credited for the teaching they provide for one another. As in the field of economic integration, trade negotiations are superior to co-ordination because the scope for reciprocal concessions is wider and more obvious'.

III

Some Broader Applications

Problems of Systemic Planning and Governability

In all countries higher education forms part of a national system. No matter how independent some institutions may be by virtue of their private funding and academic reputations, they all receive some of their funds directly, or indirectly, from public sources. In the UK, over 90 per cent of university capital and revenue now come from public sources, and the majority of undergraduates are eligible for aid from public funds. Key decisions are made by the public central authorities which determine the shape, size and, to some extent, the purposes of higher education.

But if higher education institutions form part of a system, it is not clear that they are part of a structure that behaves systemically, in the sense that it manages to achieve compatibility between known objectives, processes and products. The subsidiary question is whether higher education is governable - that is, whether it performs responsively to government policy, and is accountable to the government.

The earlier sections of this paper have demonstrated (see Figure 4) that the normative modes of individuals, basic units, institutions and central authorities (components 1 to 4 of the model) entail such varied values as the pursuit of job satisfaction and personal wants and expectations (1), the maintenance of peer group norms and values (2), the maintaining of academic regulations (3), and the meeting of social and economic desiderata (4). These disparate norms have to be artificially compounded and their variety circumnavigated in order to secure systemic planning. It is a matter for empirical and historical research to determine whether central agencies are successful in affecting the value assumptions of individual teachers and their basic units, or whether the institutions have sufficiently strong protective shells to enable them to sustain the individual and basic unit norms which they embody. We would argue that the central authorities have no direct effects on the norms of basic units, but that they can and do affect them by indirect means.

There are three ways in which a central authority may relate to the system for which it is responsible. The first is a managerial approach in which the central authority gives instructions, allocates resources to specific ends, and rewards and punishes according to the degree of conformity to its instructions. This is not a pattern accepted in most higher education systems, though it is widely familiar in industry and in some governmental R and D programmes. The second approach relies on a sizeable measure of consensus on functions, objectives and processes, so that prescription is unnecessary, and unconditional grants can be given for new developments. This pattern was prevalent in many countries before higher education became an acknowledged component of social planning, but no longer obtains in most of them. The third rests in an acceptance that there are divergencies of values and hence that there have to be negotiations between divergent components of a pluralistic system. In our view this pattern is the only one that has any obvious relevance to contemporary higher education. It remains to consider in more detail the results of this third, negotiative pattern, particularly in terms of both the central authorities and the basic units.

Links between normative and operational modes. Central authorities (which may include not only the responsible government departments, but intermediate authorities such as - in Britain - the University Grants Committee or the Council for National Academic Awards) are expected to meet social and economic desiderata set up by the political system (4). The extrinsic norms to which they are required to subscribe are converted into criteria by which institutional standards are monitored (4), (3). It is on the basis of such norms that operational decisions on the development of structures and institutions and on the allocation of resources are made (8). There is no mystery about the link between the values and objectives of central government and the operational decisions it makes. Governments seek predominantly to secure the training of skilled manpower and, to a lesser extent, the aiding of individuals for personal development and self-fulfillment, perhaps along with the equalisation of education opportunities. It is in order to perform these functions and to meet these normative considerations that central authorities decide on the resources that will go into different types of opportunities for different categories of students, the range and amount of postgraduate training, and the amount of research that will be supported by government funds.

The normative and operational modes in central authorities (4 and 8 of Figure 6) then have to be related to equivalent normative and operational functioning at other levels of the system. The central authorities deal with 'free' institutions even when, as in Britain, there are formal distinctions between the private and public sectors of higher education. (It would be true to say that whilst the universities' affairs have become steadily more subordinated to national policies, the polytechnics have become increasingly free of the prescriptions which surrounded the local authority maintained institutions from which they derived). Nevertheless, the central authorities do not make free grants of the kind that, for example, a Ministry of Finance might make to a national museum of art. They expect outcomes even if their expectations are not always specific. Indeed, they have always done this to some extent although the expectations have become stronger over time, to the point at which they almost resemble positive requirements. The first grants made by the British Treasury to the universities, for example, were made in the expectation that it would be socially beneficial for the universities to produce well educated people, though there was no attempt to relate that desideratum to sectoral or any other planning.

The central authority must, then, take a view on even the best guarded activities of individual teachers and basic units, even though, in the absence of a managerial model, it will always fall short of prescribing to them in a direct way. There are two indirect means by which the central authorities affect the norms at other levels of higher education. One is through its operational decisions about institutions and its deployment of resources, which together frame the boundaries within which academic discretion is employed. Another, less fully documented, is through the co-option of academics into the processes of evaluation and allocation. It is on the second of these mechanisms that we will now focus attention.

The co-option of academics. The central authorities not only develop new structures and institutions and allocate resources (8): they also protect higher education in various ways, including inviting members of academic staff to participate in the determination of functions. Of course, the academics consulted by government have to work within resource prescriptions determined by the government policy system: there would be no way, for example, in which they could argue for an increase in the study of literature at a time when the public interest requires an increase in the number of production engineers. But inside the limits of that framework, the recommendations as to which institutions will be expanded, and for what purposes, are made largely by co-opted academics on the basis of the judgements reached by their own peer groups, rather than on those formulated by politicians or central administrators.

Academics will naturally tend to make their recommendations in such a way as to respect traditional academic norms, while also stimulating institutions to be creative and productive. The central authorities are likely in their turn to recognise that the academic world is one of accepted (and, indeed, deliberately contrived) pluralism, in which individual talent and creativity are more respected than systematic and effective routine work. Such pluralism, which must entail the sharing of power and authority between different groups - teachers and researchers, the policy makers at the centre, and, more recently, students and employers - does, however, pose complex questions about the nature of systemic planning.

We suggested earlier that in the choice between managerial, consensual and negotiated systems, higher education has been moving steadily from consensus to negotiation. We have also pointed out that negotiation is furthered and facilitated by the device of co-option. To say this does not, of course, resolve the question of who starts the negotiations and with what kinds of propositions. In most countries, central government has wavered, from one time to another, between highly rationalistic and synoptic approaches (first generation planning in which human capital assumptions predominated) and incremental, polycentral types of planning. Often, the two coexist, giving rise to a predictable degree of confusion. Central planners are still, on the whole, synoptic and rationalistic in their ambitions, while fully recognising how difficult it is to get right the demographic and economic components of long range planning. At the same time they are bombarded with demands for participation from all the potential stake holders in policy making.

In the case of higher education, such ambiguities clearly serve to benefit the basic units and the individual researchers who wish to maintain their self-determination. It is almost as if a tacit bargain were struck. Government, in effect, allows academic judgements to prevail on what constitutes good academic work. But those judgements are to be made within the framework of the systemic norms, deriving from the economy and society. Although academic excellence is still rewarded, government money goes increasingly into areas of development determined by wider aspects of national policy.

Different normative considerations, as we have noted, apply at different levels of the system. Those who fund and those who receive funds do not share objectives. An academic teacher in a particular subject area is not concerned with the same outcomes of higher education as must be an official in a Ministry of Education or Ministry of

Finance. But part of the basis of negotiation is that as long as there is not blatant conflict between objectives, there will be freedom for the pursuit of individual preferences and for the application of peer group criteria, while higher education will, at the same time, be required to contribute towards nationally-established objectives. The system embodies a pluralism within which national, basic unit and individual objectives, far from converging, are allowed to operate in parallel.

How do these negotiative, co-optive, arrangements affect basic units? We have already remarked how a basic unit responds to the epistemologies, social assumptions and methodological rigours of its own domain of academic discourse - a domain which may well be national or international, and whose values are partly institutionalised through research councils, external examiners, the reviewing procedures for learned journals and publications, and other status systems, within the world of learning. At the same time, however, a subject department or comparable unit cannot overlook the fact that its work is being monitored as 'relevant' or 'academically excellent' by a central authority. These central judgements have operational effects. The central authorities might decide to encourage the expansion of a particular unit's functions, and make available additional resources for the purpose; alternatively, the may let it dwindle through lack of positive support unless it can defend its right to be given adequate resources in terms of the quality of its academic provision.

The basic unit is, therefore, responsive to two sets of judgements made within the higher education system and they contain different criteria and expectations. But it also responds to exogenous forces. Market forces help determine whether students are recruited or whether other sponsoring agencies, such as private industry or public bodies that send students or give resources, continue to support it. These external pressures are independent of the values of higher education itself. The external factors have direct effects on the ability of the basic units to recruit - with the result that fewer school children learn classics, fewer chemists get jobs, and nuclear physics no longer holds public esteem as in earlier days. They become part of the environment within which both the basic units and the central authorities work. Some of the responses by the central authorities are symbolic: a return to strong support for technology can be signalled by all sorts of status rewards and appointments to leading individuals.

The social and economic values established by a higher education planning system thus comprise one set of normative constraints within which higher education institutions and units move. Another is that of the academic peer system. These two sets of considerations interlock in part because the allocative power of the system helps to determine the quality of what can be done in the units, but in part also because the system of co-option discussed earlier protects the units against purely administrative decisions. There has to be, in effect, a negotiation between the academic ambitions of basic units on the one hand and the demands for qualified manpower, efficient management, and so on by the central system on the other. Where there is a direct conflict of interests, an accommodation eventually has to be made. For example, the central agency might say, in effect, 'we wish these people would do more to produce applied social scientists rather than theoretical sociologists but they are good at what they do and we can't afford to withdraw our support from them'; or else a department might decide to appoint someone working in policy studies rather than on Aristotle's political theory.

The complications of governability extend beyond the level of the basic unit, to the individual academic. The problem is that every teacher is expected to exercise his or her own sense of integrity: to be true to his or her own standards, even when working interactively with other individuals within the system. Society has traditionally expected its academics to be independent, even though that tradition has to some extent been eroded by such considerations as the customer-contractor relationship between government and academic research, and by demands for 'relevance' from the student body and from others in the wider society. Even so, it should be noted that government uses academics as consultants and committee members because it wants to have, or to be seen to have, independent judgement on some of its own activities.

Thus far, we have tried to establish that the problems of systemic planning are threefold. First, there are different value sets which can be reconciled through negotiation but never aggregated into a single whole. Second, there is discretion deliberately accorded to the basic unit and to the individual academic within it. Third, there is the hazard that besets all rational attempts to cater for the future - namely that events outside the system and beyond the central agent's control, serve to make nonsense of the best laid plans.

Does this mean that systemic planning has no jurisdiction over questions of academic substance, but that it merely provides a provisional framework within which academics are free to pursue their own ends? At the individual level and at the level of the basic unit, academics de facto establish their own norms. Manifestly, however, changes in the operational mode affect the ability to maintain existing values. Thus the changes in the economic climate, the uncertainty about the social benefits of higher education, the changes in educational priorities from that of producing an elite to such priorities as recurrent education, have all led to the changes in the environment as described on pages 60-61. They, in their turn, cause reactions by the central authorities, in their normative mode, and ultimately cause resources to be allocated differently to institutions (elements 4 and 5). For example, changes of staffing ratios which may result from changes in funding policies, do far more than affect the operational mode of the institution (7). They may ultimately impinge on the normative mode of the basic unit. If academics are required to teach more, or generally to regard less of their time as free from standard duties in the basic units, senior members of staff might not go out and get research money. Undergraduate teaching might then be affected since academics will depend more on secondary sources than on their own research for teaching material. Thus individuals might change their own norms, and together modify the norms of the basic unit. In such a fashion, judgements made in the political system and operating within the central authorities can affect not only the way that basic units and individuals work, but also the values to which they subscribe.

This brings us, finally, to the basic problem of planning: how cen rationality, or a match between ends and means, be secured? Since the norms and values differ at different points in the system and, in particular, the basic unit generates and respects norms that are not identical with those of the central agency, it follows that there is no consensus either about ends or about the corresponding means. Our argument has been that since there is within higher education no established and accepted hierarchy of ends and means, but rather a series of negotiations between different purposes, the system cannot realistically be seen as one which is integrated and governable.

Applying the Model in Another Context

In principle, our model should be capable of application to other systems, and certainly to any in which individual practitioners and basic units have considerable freedom to set their own norms and operations, but nonetheless work within a multi-level structure.

The earlier analysis has suggested that there are quite strong linkages in terms of the allocation of resources and tasks through the operational mode. In the case of higher education, however, the impact of the four levels on each other within the normative mode are often indirect and subject to negotiation, rather than directly applicable prescriptions. An analogous system might be the British national health service, and particularly those parts of it which are concerned with clinical and medical work. The analogy is not complete because doctors work within a highly complex technological environment in which the basic units, though powerful, are required to act coherently so that services converge meaningfully onto individual patients. There is also a stronger implicit accountability in medicine than in higher education. No professor has yet been charged with negligence in a court of law. Several scores of doctors undergo this fate every year.

The levels which can be identified within the health service in the UK are those of (a) the individual medical practitioner, let us say within a hospital, (b) the department or 'firm' or perhaps division, within which he works, (c) the area health authority to which he is primarily accountable*, and (d) the central government department, the Department of Health and Social Security. It should be emphasised, however, that there are many other basic units within the health service (such as a pathology laboratory, a catering service, or a school of physiology) which could equally well be used as an illustration.

The characteristics of the individuals within the basic unit are surprisingly like those of their academic counterparts. Practitioners diagnose, prescribe and treat patients at individual discretion. The normative mode certainly includes instrinsic job satisfaction and meeting personal wants and expectations. There are extrinsic requirements which include subscription to the group norms of other doctors within a department (1). The hospital medical committee to some extent maintains group norms and values and ensures conformity with institutional requirements (2). The difference is that whereas teachers have to come together to produce a shared curriculum (5 and 6) there is a stronger, but not absolute, assumption of individual work by doctors with individual patients. It should be emphasised, however, that whilst individual doctors are responsible for work with individual patients, responsibility can be shared by negotiation. Treatment is coordinated between specialties, and all of them draw, of course, on such common services as pathology, radiography, patient records and the hotel-keeping services of a hospital.

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* By a particular artefact of the British system, hospital consultants are employed on contract by the regional authority rather than the area authority. But this need not affect the main lines of our argument here.

The boundaries of the institution, in the British national health service, are at present obscured by an over-elaboration of structure in which area health authorities, district management teams and sector and unit (or hospital) administrations are in uncertain relation with each other. However, a health authority fulfills the same institutional functions in the normative mode as a university or a polytechnic. The area health authority is concerned with maintaining the standards of health provided within its area and conforming to central demands. It maintains the institutional fabric, produces forward plans and implements policies (7).

The central health authorities in the UK are overtly different from those operating in higher education. The central government department approves capital building, and in that respect, its practices are similar to those of the University Grants Committee. But it has a hierarchical relationship with health authorities in that it appoints many of the members and approves budgets by the line. It also approves the establishments of senior medical staff and is thus able to control the balance between different medical activities.

In the health service, then, it could be said that the normative mode adopted by the central authority is stronger, inasmuch as it seeks to identify social and economic desiderata and imposes them far more strongly through its allocation of resources, approval of new developments and the development of new structures or institutions. But the problems of asserting central norms are remarkably similar. Indeed, the health service is perhaps a better test of our model than is higher education, because there are such strong imperatives being developed about health policy.

These take three closely interrelated forms. First, there is an attempt to ensure that the prestigious scientific model of medicine is to some extent challenged by the social caring approach to health. This looks towards prevention of sickness and disease through environmental change, the demystification of the medical profession, the modification of the supremacy of established expertise in the health services by multi-disciplinary contributions to health through social welfare as well as through medical technology. Secondly, there is an assumption that medicine should be partly deinstitutionalised and that resources should be diverted from hospitals into community health schemes in which the patient's home occupies a centrally important place. Thirdly, there are attempts to redistribute resources from the prestigious centres of research and hospital excellence towards new population areas, and towards new social caring functions within them.

These demands are asserted at many levels. There are several members of the medical profession who share the belief that a wider range of health care conceptions should be admitted. Yet it is inevitably the central agency, through its reorganisation of the health service, and through the health authorities, which asserts the new policies. In so doing, it encounters the normative assumptions of the individual practitioner and the professional resilience of the basic units (1 and 2).

In the health service in England and Wales there are, indeed, deliberate attempts to establish relationships between the norms of practitioners, the policies established by basic units and the total system. Government has established 'operational' planning cycles of 3 years and 'strategic' cycles of 10 to 12 years. In these cycles, the regional and area health authorities working to them are required to consider the total health needs of the regions and the areas. They take account of demography, the present and potential patterns of ill health, the existing stocks of buildings and of manpower, the potentially conflicting demands of curative provision as against health teaching, and the potential flow of resources to the regions and the areas. They produce plans which have to be discussed with the relevant professional consultative bodies, the trades unions, the community health councils which are supposed to represent the consumers, and the adjacent local authorities responsible for social welfare services.

In these attempts the central authority has to resolve all the problems of systemic planning. Essentially it seeks to assert such social norms as a shift from the clinical, disease-curing emphasis in health towards preventative medicine based on community and domiciliary services. It must aim to remove the emphasis on centres of excellence, mainly based on the metropolitan teaching hospitals, so as to ensure a more equitable distribution of physical, financial and manpower resources throughout the country. These changes inevitably cause considerable disturbance in the established values of individual practitioners in hospitals (as well as those in family and community practice), and in the group norms of the basic units which protect and provide facilities for individual practitioners. They mean that doctors can still prescribe freely but that their command over large-scale resources is less certain, even though they are ostensibly more involved in management decision through formal co-optive procedures. Inevitably, once the national policy system seeks to emphasise work that requires less high level and specialised medical intervention than before, the authority of the individual practitioner to exercise his own bio-medical and scientific preferences in treatment comes under challenge.

At the same time, however, the central authority is reluctant to direct medical practitioners to act in unaccustomed and unfamiliar ways. Instead, it creates a planning system which is indicative rather than imperative. The indications are given through different building allocations and through the ways in which it allocates funds, sanctions the establishment of particular medical posts or provides (or fails to provide) equipment to different specialties. These actions impinge on individual practitioners and basic units not only by differentiation of resources which directly affect their work but also through expressive and symbolic means. Prestigious units may find themselves being reduced in size and resources whilst new groupings are being created; by the same token, they may be made to feel that social prestige and encouragement is being directed elsewhere.

Such actions by central government, which can be seen both as indirectly expressive and as more directly indicative, can be identified in higher education as well. In Britain, for example, the central government is careful to give Directors of Polytechnics knighthoods and to give somewhat fewer than hitherto to Vice-Chancellors of Universities. The rhetoric of government approval is in some contexts significant to academics as are the resources which reach them: and the two are of course not unconnected.

Health is not entirely analogous to all forms of higher education. Much higher education can be carried on within quite limited provision as long as there are tenured staff and adequate teaching space. Health care systems are, in contrast, exceedingly costly, and the individual practitioner is dependent upon resource allocations in a far more direct way.

Moreover - and this is a criticism of the British health service that is often made - there is far less certainty as to what is the institutional level (3 and 6 in terms of our model) in health. At one time it was plainly the hospital. Increasingly hospitals were grouped so that four or five former hospitals became a hospital group which established some kind of collective identity. Those groups have now given way to more anonymous organisational forms known as 'units' and 'sectors' working within large area health authorities. In the 1974 reorganisation of the health services, so much emphasis was given to the large scale authorities in the interests of rationalistic planning that there is, in fact, a serious gulf between the basic units (medical departments and consultants' firms) and the central authorities.

One of the interesting points arising from the contrast between higher education and the health service in Britain is that whilst higher education institutions appear somewhat weaker in the face of stronger central authority planning, they serve as some kind of protective shield for their basic units and individual practitioners. The health service does not seem able to provide that vitally important function.

Both services demonstrate, however, how the individual practitioner and the basic unit strive to create a world of their own. The normative assumptions of the central authorities and of the larger scale institutions affect the values of individuals and peer groups not only by asserting contrary values deriving from the larger social system but also by the operational decisions that they make. Negotiations and co-options occur in both contexts. The issue is whether these result in a shift in the values and practices of both parties. Over time, they surely do.

CONTRADITION AND INNOVATION IN HIGHER EDUCATION AND LEARNING — A RESEARCH PROPOSAL

by Ulf Himmelstrand

Some years ago I attended an international political science Round-Table, where Karl Deutsch was the last speaker. His paper dealt with social psychological correlates of political participation. In the following discussion I criticized him for his "methodological individualism", and pointed out that results quite different from those reported by Deutsch might be attained if the participation levels of other observation units of a collective nature had been analysed, and the structural characteristics of a given political system as a whole were taken into account as determinants of political participation.

The time was short and the chairman brought the discussion to a close before Karl Deutsch could make a rejoinder.

One hour later we were leaving the hotel for the airport. In the lift Karl Deutsch stood close to me, and dryly remarked: "If you are a surgeon studying and operating on an appendicitis, do you then have to study the hospital as a whole!" He hurried off to his taxi. He had made his point. Perhaps it is a good point, perhaps only a false analogy. Anyway, his witty remark highlights a problem which I tend to approach in a manner which has made this particular paper twice as long as it would have been if I had taken the more prudent approach suggested by Karl Deutsch.

The paper is divided in two parts. The first part deals with the larger context of science and social policy within which institutions of higher learning and education operate. The second part of the paper takes a closer look at these institutions in that larger context.

Science and Social Policy

"The Call Girls in their finest hour are going to save humanity." Arthur Koestler, in his latest novel, has assembled a dozen distinguished scientists, philosophers and sociologists - the "call girls" - at a Swiss alpine village to discuss "Approaches to Survival". At the end of this one-week symposium it is clear that it was a failure, even in terms of allowing the participants to have a nice time together. These twelve top products and producers of higher education seemed to have little or nothing to contribute to the survival of mankind. Why?

Mark van de Vall, by evaluating a large number of applied social research projects, has arrived at the conclusion, here somewhat simplified, that a combination of two conditions must be fulfilled to make an applied social science project have an impact: (1) Use of qualitative, coherent empirically grounded theory; non-theoretical quantitatively stringent projects had less of an impact. (2) Location close to significant centres of policy-making or decision-making; detached academic research even if oriented toward applications is less likely to have an impact. (van de Vall, 1975; van de Vall, Bolas & Kang, 1976).

Each of these conditions, taken one at a time, would seem relatively simple to implement. The combination, however, may be somewhat more difficult to attain.

The theoretical frameworks presented in the symposium so vividly depicted in Koestler's novel were contradictory rather than coherent, and not always empirically well grounded. Even though one or two participants in the symposium were close to centres of power, the symposium had no relationship whatsoever to any significant centre for policy-making on "survival". At the opening session the chairman of the symposium reminded the participants of a certain letter written by Albert Einstein in August 1939 to President Roosevelt about some recent work by nuclear physicists which later resulted in the construction of the atomic bomb, first used in Hiroshima. The chairman implored the participants to work constructively toward a resolution which similarly could be sent in the form of a letter on how to solve the problems of survival facing mankind - again to the President of the USA. No such resolution was taken at the end of the symposium - but the general idea was there: the survival of mankind was in the hands of the most elevated figure in the most powerful country of the world today.

Two sets of questions emerge as a result of reflections on Koestler´s story as contrasted with van de Valle´s research findings:

1. How can we attain the most fruitful combination of coherent, empirically grounded theory and closeness to "significant" centres of decision-making in relating higher learning and education to the needs of society?

2. What decision-makers are "significant" and thus worthy partners of collaboration with scientists concerned with explaining and understanding the course of technology, and the social, economic and political events which shape contemporary history?

The second question is not raised by either van de Valle or Koestler. It is a somewhat disturbing question - at least if you consider it a bit more closely. And since the way we answer this second question partly determines the answers we may find for question 1, I will deal with the second question first.

Who are the Decision-makers in Need of Science?

The term "decision-maker" in the following is understood as including agenda-setters, policy-makers, legislators and other makers of more minute political and economic decisions in politics, administration and business. There would seem to be an elitist bias in the way we conceive of decision-makers. Probably this bias partly derives from the structure of our political systems. Representative democracy may be less elitist than other political systems but it also relies mainly on elites for making decisions - elites obtained through general elections. This is a system which most of us not only accept but find to be the best of all existing political systems. It will not be questioned in this paper. Nor will I here question the role of business elites which probably also have contributed to shape our image of the decision-maker. Rather I wish to emphasize another source of elitism which is more relevant in a discussion on higher education: the elite notions implicit in some prevailing conceptions of science and learning.

To illustrate what I mean by this implicit elite notion I quote a passage from Kenneth Boulding´s A Primer in Social Dynamics (1970:v) which effectively pin-points a notion of science which I take to be a main sourse of elitism in advanced industrial societies. Boulding states that dialectical processes "- important as they are in the short run, and significant as they are to those participating in them - are not the major processes of history but only waves and turbulences on the great historical tides of evolution and development, which themselves are fundamentally non-dialectical." The most interesting aspect of this quotation is the superiority implicitly attributed to the synoptic overview of "great historical tides of evolution and development" to the neglect of the perspective of those actually participating in dialectical processes. Boulding could here be contrasted with Marx. The historical materialism of Marx is both elevated above and immersed in "the turbulences" of history. Boulding´s own perspective is only elevated: an elite observer looks down on the world of temporal affairs. It is the perspective of an external spectator, of a non-partisan who contemplates his insights about creation sub speciae eternitatis but rejects the idea that he could derive any scientific knowledge by stepping down to participate in the incidental, temporal and sometimes turbulent affairs of contemporary history.

Probably very few academic social scientists or historians today would explicitly admit applying this kind of elevated, synoptic perspective from above. They may even reject it as being too sweeping and unscientific. But even the work of more pedestrian and micro-oriented structural functionalists, economists, psychologists and others implicitly takes off from this "value-free", detached elite perspective.

To make "value-free" science relevant to practical, economic, political, or administrative action it must be combined with notions of goals or value-premises. When thus combined with scientific knowledge these values generate practical conclusions about means to be used to attain the goals which have been set. Goals or value-premises are often derived from classical notions such as freedom, equality and brotherhood, or from notions such as creativity and criticism etc. - an abstract ideological heritage which is still invoked in Swedish government commission reports. [12]

Again these notions of values and goals, just like scientific notions of knowledge, are applied from above, in some kind of idealistic and benevolent perspective which is condescending in its very direction and content, quite apart from the fact that it also requires a political elite possessing, translating, and applying these notions.

We may now ask: Who else could be "significant" decision-makers, but our political representatives, our best scientists and technologists, and our most successful businessmen?

If we look at the political scene in Sweden today, not "sub speciae eternitatis" but in a close-up view on two of the issues loaded most heavily with political dynamite - nuclear power and worker-controlled capital funds (löntagarfonder) - both with far-reaching implications for the future development of this country, it is obvious that the forces which have pushed these two issues forward on the political arena do not emanate from university, political or business elites. These elites have only been responding in one way or the other to the pressures applied by trade-unions, small but committed groups of environmental activists, and concerned groups of marginal voters in the 1976 elections. The new policies and reforms which probably will emerge as a result of these pressures have not originated from a combination of non-partisan science and elevated ideological value premises but from the predicaments and fears felt by common people, and articulated by union and citizen activists who do not conform to elitist notions of "significant decision-makers".

I think one of my points has been made. Whether we like it or not, we will increasingly find that "significant policy" will be initiated if not always completely explicated not by our scientific, technological, business or political elites, but by new groups of people who in a partisan way express and articulate their predicaments and fears, and demand responsive and constructive rather than condescending and constraining elite reactions, to help them to do something about the threats they perceive as generated by our technological and economic system.

If those of us who are members of the academic community wish to collaborate closely with "significant" agenda-setters and decision-makers, as suggested by van de Vall, in order to make our presumably coherent and empirically grounded theoretical frameworks apply to the practical problems of our societies, then we have a new choice to make. There are new types of significant agenda-setters in our society. We must now ask ourselves whether the type of scientific knowledge and competence we have developed - in the non-partisan, value-free perspective indicated in my quotation from Kenneth

Boulding - is relevant to this new non-elite type of policy-directions? Are our academic institutions of higher education and learning at all equipped to relate to anything but the old type of elite decision-makers?

But there is also another point to make about "significant" decision-makers - a point which I will make quite briefly by asking this question: Are there not in our society problems without problem-solvers, crucial issues without any significant decision-makers at all? Statements about such crucial problems and issues (which often involve a need for structural transformations bound to shake established elites) are often dealt with by a process which Bachrach and Barratz (1970) have called "non-decision". Eventually statements about such crucial non-issues will end up in the garbage-can. Non-decisions and the garbage-can are potent instruments of establishment power.

Problems and issues neglected often accumulate, and sometimes get worse in the process. Sooner or later those who are most closely exposed to them, or most concerned with those who are exposed, are likely to take some kind of action - and eventually this may result in the emergence of activists - the new kind of agenda-setters and policy-makers mentioned earlier.

Sooner or later, I said. But perhaps the process can be speeded up by the help of the sciences - applied in a less elevated fashion than suggested by Kenneth Boulding. Perhaps problems and issues can be discovered by social or natural scientists while they are still weak signals not adequately received even by a significant minority of those most immediately concerned? Perhaps social science can even help to detect the lack of arenas where agendas can be set, and policy made, and to provide information which mobilizes actors concerned with creating such arenas, to prevent a too extensive use of the garbage-can of non-decision.

Here we can proceed to the second section of this paper. What are scientists actually doing when they are doing and teaching science, in institutions of higher education and learning, or in the role as consultants or researchers in practically oriented projects? To what extent and how are the intellectual, social and organizational structures and activities of universities, and other centres of higher learning and education, equipped to identify (1) societal and not only scientific problems, and (2) significant agenda-setters and policy-makers in society, and (3) to work closely with them?

The Academic Mode of Production: Some Outstanding Research Problems

At least in Sweden models of educational technology have been rather commonly used in the study of higher education and learning. Such models specify goals, constraints (usually of a financial nature), educational processes, results, evaluations of results, and consequent revaluations of goals, constraints and processes.

I see two short-comings in applying this kind of model to higher education and learning. One short-coming would seem to be rather easily corrected. Research processes should be added to the educational processes specified by these models. The other short-coming is more basic to this technological approach itself, and cannot be remedied without replacing, or at least supplementing the model of educational technology with a completely different model.

In technological models goals tend to be formulated first in rather general terms such as democratization of higher education, encouragement of creativity and criticism, adjustment of educational content to vocational and professional needs in society etc. These goals are then broken down into sub-goals, but these sub-goals may still be of a rather abstract nature. Eventually various alternative means for attaining these various goals and sub-goals are explored in more concrete detail.

Too often this whole operation of setting goals and seeking means is carried out without fully and systematically utilizing what we happen to know about the unique characteristics of a university, its systemic properties, its present position in a historical process, its internal contradictions at a particular historical juncture, and its problematic relationships to external conditions which again are often characterized by a historically determined set of contradictions, options and constraints. 2)

If educational planning is undertaken without a systematic consideration of such highly relevant aspects of the planning object - that is the characteristics of universities at a specific historical juncture - then the plans and reforms generated are bound to give rise to counterproductive results. It is as if a carpenter was setting up goals and plans for his carpentry without taking into account the hardness, the breakability, the flexibility etc. of the wood he is going to use. Like any analogy this one has its limitations; still it may help to get across one of the main objections I have to much of the literature in educational technology. It is a technology without proper utilization of available or attainable knowledge of the material to which it is supposed to apply.

Goals of higher education and learning may, for instance, be specified not only with regard to the end products aimed at, but also in terms of the "mode of production" of higher education and learning. One rather unique characteristic of the scientific production process is that we cannot always predict its end product - at least not with the same certainty with which a car manufacturer can predict that cars will come out at the end of the assembly line. What can be specified with relative rigour, sometimes, are the methodological principles to be applied in scientific work. Scientific method is one important aspect of the university "mode of production". Therefore it may seem more important to specify goals of higher education and learning in terms of its mode of production than with respect to its end products.

But again this is too simple.

Even with respect to industry, it would seem more important at certain historical junctures to articulate new goals for the industrial mode of production itself rather than for industrial output. Not only Marxists see our present capitalist mode of industrial production as increasingly problematic, and in need of profound structural changes, to overcome its internal contradictions.

The academic mode of production, on the other hand, may be so unproblematic, at certain historical junctures and in certain disciplines, and operate so smoothly and predictably in the production of what Thomas Kuhn calls "normal science" that the main question is what to produce, not how to produce it. Goals can then be set in terms of the kind of research problems and fields of higher education which should be given priority rather than in terms of the academic mode of production itself.

Other historically specifiable complexities arise when we look at how higher education and learning relates externally to society at large. As Joseph Ben-David (1971) has shown, modern science and the role of the scientist, as we know them today, could not emerge and become established until scientific work in the 16th century was separated and assured some independence from the practical and moral concerns of society and church. Once the role of the independent scientist had been established, however, scientists did find it quite helpful, in certain stages of their work, to seek contacts and advice from practitioners such as ballistic experts, architects, mining engineers and navigators.

Probably one could find such phase-movements of isolation from and contacts with practitioners not only in the history of science but also in the careers of single scientists. But such phase-movements in the scientific process is not necessarily most conducive to scientific innovation when it takes off from academic isolation and then moves on to contacts with those articulating the practical needs and techniques of society. A closer look at the history of scientific break-throughs also gives proof of the accumulation and elaboration of obsolete thoughts and techniques in academic institutions, while new ideas and practices emerge in society outside the academic community (Björn Eriksson, 1975:139f). In such cases scientists would probably do better by breaking away from academic insulation at an earlier point in their research careers, to return to the academic community later on with new ideas to be more carefully explored and explicated than is possible for practitioners absorbed in their daily routines.

Regardless of whether scientists serve as an avantgarde, or find it more scientifically fruitful to listen to the avantgarde of technical or social practitioners outside Academia, the contradiction between the elaboration and eventual stagnation of "normal science" and the revolutionary innovation of scientific paradigms, is a major element of the development of institutions of higher education and learning. With regard to university development, no educational technology or planning which neglects such historical aspects of this development therefore can do its job properly.

In view of these complexities of historical evalution and revolution of academic modes of production I will here propose a research programme intended to explore the "planning object" of planned university reforms.

A Research Proposal

My approach is indicated by the following headings which will later be discussed in some but not complete detail:

(1) Actors in Academic Production.
(2) The Forces of Academic Production.
(3) Social Relations of Academic Production.
(4) Processes Affecting the Interplay of Forces and Relations of Academic Production.

(5) Incompatibilities between Forces and Relations of Academic Production.
(6) The Political and Academic Administrative Superstructure of Higher Education and Learning.

Any similarity between these headings and the terminology of historical materialism as elaborated by Karl Marx are purely coincidental. Any knowledgeable reader knows that a Marxian analysis of modes of production can apply only to industrial production where the unpaid labour of past and present generations of workers is the capital and the profit of the capitalist class. No such relationships exist between the main actors in academic production - students, teachers and researchers. To the extent that entrepreneurial exploitation occurs within the academic community this is not a definitional and necessary element of the academic mode of production, as it is in the capitalist mode of production. However, I will admit that there are some elements of the method of historical materialism, and some fundamental insights concerning the compatibility between forces and relations of production in Marxist thinking which I have found useful in coming to terms with the complexities of the academic mode of production. And I have not bothered to invent another terminology than the one Marx developed for a completely different domain of social life.

(1) Actors in Academic Production. The most obvious actors in academic production are students (S), teachers (T), and researchers (R). To this I would like to add practitioners (P); they are not always only consumers of the products of our universities - that is of academically competent personnel and scientifically valid research findings - but also may influence academic production more directly.

To simplify my presentation somewhat I will in the following concentrate a great deal on the triangular social relations between teachers, researchers and practitioners. It is true that students increasingly have become much more than just a "material" of academic production by achieving a certain measure of power in the academic decision-making process. However, it would seem possible to do justice to this fact by successively complicating a preliminary, more simplified triangular analysis.

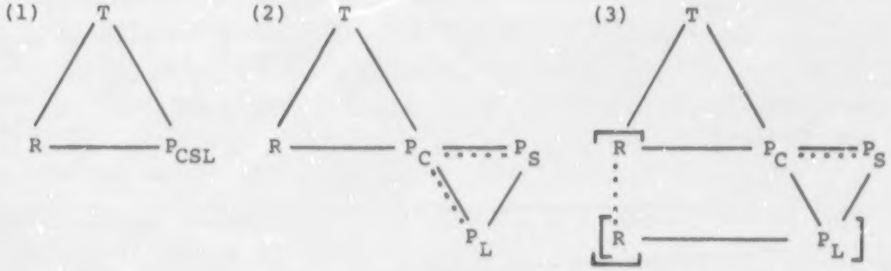
I will not here primarily concern myself with the values, attitudes and qualifications of actors but rather with some *processes* of production of which the actors are *bearers* (see point 4 below).

(2) The Forces of Academic Production. The Marxist notion of "forces of production" includes the raw materials, the "man-power" and the technology employed in production. In academic production the "forces" of production are the scientific problems involved - issues as well as "non-issues" of research in progress - and also the qualifications of teachers and researchers, and the instruments and laboratory equipment utilized. Teachers *reproduce competence* by communicating accepted scientific problems and problem-solutions, by supervising training in the use of laboratory equipment and other instruments, and by carrying out examinations to evaluate the competence reproduced. Researchers are working to *gain new knowledge* either within the framework of "normal science", or by introducing new ideas and methods to come to grips with the theoretical and practical anomalies of "normal science", and thereby in the process, perhaps, helping to build new scientific paradigms.

(3) Social Relations of Academic Production. I have already mentioned the triangular relationships between teachers, researchers and practitioners. These relationships should not be understood here in a limited sociometric sense, but in terms of the compatibilities or incompatibilities emerging between some underlying processes of which these actors are the bearers. I will have more to say about these processes in the next section. Here I will first concentrate on some of the more "sociometric" aspects of these triangular rela-

tionships by sketching what I believe to be these relationships within the academic discipline of economics in Sweden. I may be wrong about the manifestations of this triangular relationship within this discipline, but that doesn't matter terribly much in this context. Here I am primarily concerned with certain theoretical properties of this triangular relationship, not with the concrete case which I am using to make my analysis more interesting, and perhaps relevant for an empirical study of this case.

Figure 1. Relations between Teachers, Researchers and Practitioners in Economics



——— = relatively harmonic collaboration

······· = non-collaboration, disharmony

$\overline{\cdots\cdots\cdots}$ = mixture of collaboration and disharmony

[ ] = tentative relationship

Subscripts: C = Capital; S = State; L = Labour

In figure 1 I have indicated three cases of the development of the triangular relationship between teachers, researchers, and practitioners as I believe they have developed with respect to economics as it has been taught, studied and practiced in Sweden for quite some time. In terms of graph theory case (1) represents a completely balanced graph. Relationships of mutual interest and collaboration exist between all the three types of actors involved. The category of "practitioners" includes representatives of capital as well as state and labour (CSL). This represents a certain period in the fifties and sixties when Sweden developed and applied a labour market policy based on the assumption that market processes are the best mechanisms for assuring an optimal allocation of labour, and thereby for promoting economic growth. Even within the labour movement and the trade-unions this kind of economic thinking was predominant. Removing "market imperfections" in the labour market was seen as a main task. Gösta Rehn who designed this labour market policy was an economist employed by LO, the central trade-union federation. Rapid economic growth with full employment, at a reasonable price of limited inflation, made it easy to define large areas of common interests between labour and capital, as indicated even by a Marxist writer like Mats Dahlqvist (1975:177). In the triangular relationships of academic production neo-classical economics was not only taught but also used in research and applications.

In case (2) collaboration among various categories of practitioners is becoming more tenuous, at least in certain fields, and conflicting interests are more clearly articulated. Wage-related taxation directly on production (arbetsgivaravgifter) and the decreasing level of liquidity and self-financing of companies generate more problematic relationships between state and capital; on the side of labour the increase of wildcat strikes and absenteeism are indications of non-resolved issues which apparently could not be handled within the old framework of capital-labour collaboration. This period started in the late sixties, and continued into the seventies. But teaching and research in economics continued without being bothered too much about these events; they were considered external to the discipline of economics. Increasingly economists would find that affinity of thought could be maintained only in their relationships with representatives of capital; the neo-classical models were not applicable, or even implied a rejection of some policies of state and labour.

In phase (3) which has just barely begun, the teaching of economics is still overwhelmingly dominated by the "normal science" of neo-classical theory, and most of economic research is also undertaken within the same framework, but among researchers a few, mostly younger people, try to work within the framework of other paradigms which are more relevant for understanding problems confronting labour than those facing capital. Sometimes they do this very cautiously not to antagonize their professors; sometimes conflicts erupt but without much impact since neo-classical theory so completely dominates and permeates both teaching and research. By concentrating their analysis on the problems of underdeveloped countries young economists with a critical attitude to neo-classical economic theory may be able to get away with it without creating too much fuss; underdeveloped countries are so abnormal anyway.

This sketch, or some readers might say caricature of the third phase, would probably turn out somewhat differently for, say, England than for Sweden. It is my impression that the rule of neo-classical theory is less monolithic in England; it is there also quite respectable to work within the field of "political economy", and not impossible to seriously treat the critique of political economy initiated by Marx a century ago.

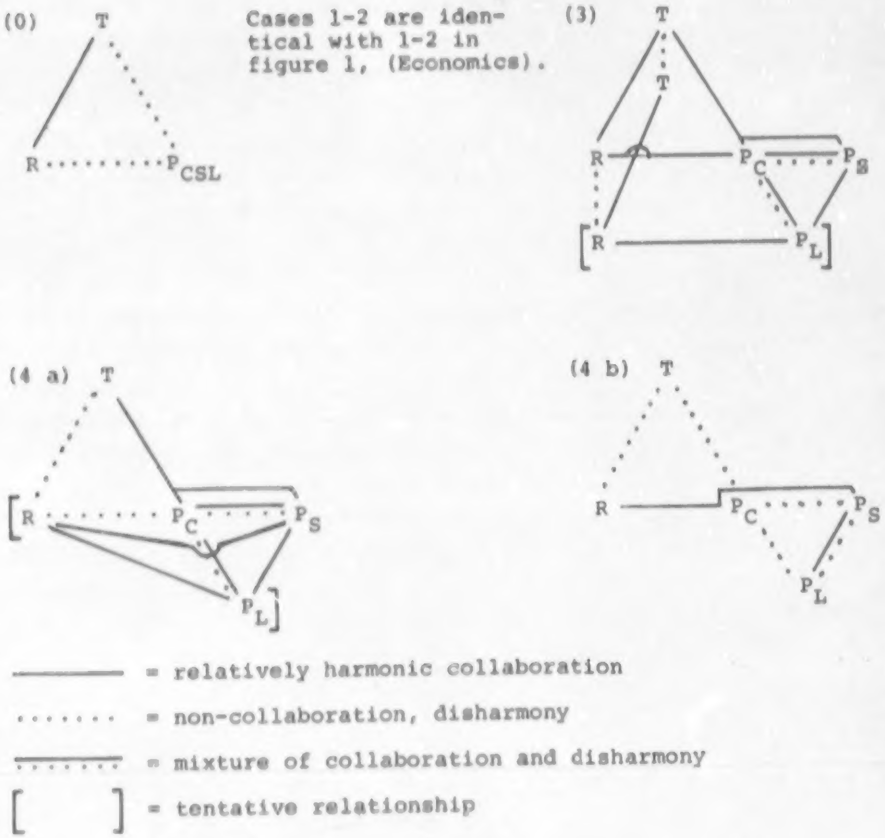
Before sketching a similar sequence of phases for sociology in Sweden, I will here introduce an actor which I have until now deliberately neglected - the student. I know too little about the role of oppositional students in Swedish departments of economics - if this has not been studied empirically it is high time to study this now, in retrospect as well as prospectively - but I guess that students are one source of scientific revolution hitherto rather effectively suppressed within economics.

Swedish students were quite recently highly concerned both with underdevelopment and imperialist wars abroad, and with some of the more protracted wildcat strikes at home. These events presented new issues for scientific consideration - issues which were and still are non-issues within the academic establishments. Theoretical frameworks more adequate for dealing with such events - mainly derived from Marxism or conflict theory - were not introduced by the teaching and research establishment but by students, or young teaching assistants who were part-time students as well. But in economics these new trends have not been reflected as clearly as in economic history, sociology or political science. Why?

One reason might be found in the kinds of students recruited to these various disciplines in this period of paradigmatic change, and of transformation of non-issues into new issues for scientific study. Perhaps oppositional and critical students knew, or soon discovered, that economics as a subject is so completely permeated by the assumptions of capitalism, and so completely geared to the study of reproduction and growth within this system, that they turn to other less scientifically mature, and thus less restrictive social science disciplines? The freedom of choice in recruitment patterns of students to various disciplines is another aspect of the academic mode of production which deserves more careful theoretical consideration and empirical investigation. But such studies should be pursued with due consideration both for the impact of various social relations of academic production in various disciplines, and the issues (or non-issues) generated outside the academic community as suggested in figure 1, cases (2) and (3).

Another possible source of paradigmatic innovation within economics in the kind of situation depicted in case (3), figure 1, are some senior researchers and teachers with long-lasting relationships to the labour movement. However, both their more established position within departments of economics dominated by the neo-classical paradigm, and the fact that the labour movement in Sweden until recently relied almost exclusively on this paradigm would of course make it more difficult for these actors to break completely with existing patterns of thought. As Thomas Kuhn himself has remarked, theoretical and empirical anomalies of an existing paradigm are not in themselves sufficient for a scientific revolution. At least a nucleus of an alternative paradigm must be available. Established economists are not likely to accept modern developments of Marxism as such an alternative paradigm, but would have to reinterprete the old paradigm to resolve these anomalies. This could be done by adding various ad hoc assumptions to expand the range of established models. There is in Sweden today at least one professor of economics who has shown considerable interest in expanding the range of economics to include problems of workers self-management (Bo Södersten 1973). These attempts may turn out to be important in that they may help to bridge the gap between the now predominant doctrine, and new paradigms which may develop.

Figure 2. Relations between Teachers, Researchers and Practitioners in Sociology



Cases 1-2 are identical with 1-2 in figure 1, (Economics).

= relatively harmonic collaboration

= non-collaboration, disharmony

= mixture of collaboration and disharmony

[ ] = tentative relationship

In figure 2 I have illustrated some triangular relationships between teachers, researchers and practitioners with regard to the development of sociology in Sweden. The style and content of sociological teaching and research in Sweden, from the late fourties and up into the late sixties, were largely imported from the USA, perhaps with more emphasis on social psychology than in the US, however. The first chair of sociology in Sweden was created at the University of Uppsala in 1947. The first few years of the development of sociology in Uppsala were characterized by a development of theoretical and methodological interests rather far removed from the needs of practitioners in society. From the point of view of the development of sociology in Sweden as a whole this first period of academic isolation would seem to have been of some importance in that it elevated purely theoretical work, and empirical work without any broad societal significance, to a level of respectability which has served as a platform for "basic" research. Similar social relations of sociological production seem to have developed a little later at the sociology department at the university of Lund (see case 0 in figure 2).

In the early fifties, however, sociologists in Uppsala and elsewhere got involved with large-scale research projects in industrial sociology sponsored mainly by the management side, even if trade-unions were marginally involved in the spirit of collaboration between capital and labour characteristic of those times. In Stockholm where sociology was not given a first launching period when it could turn inwards toward its own theoretical problems, and where furthermore the practical needs of state and industry were more closely felt because of the location of this department in the capital city, theoretical work never became as respectable as in Uppsala and in Lund.

The sequence from the early fifties and up into the late sixties would seem to be very similar to that of economics. The reader might benefit from going back to figure 1 to see what we are talking about, one important difference being of course that economics dealt mainly with the market while sociology focussed most of its attention on what Göran Therborn (1976) has called the "ideological community". In this period of collaboration between capital and labour, teaching and research on social norms, social roles and habits, attitudes and communication patterns of the "ideological community" was quite relevant to the practical ideological needs of industry. But sociology was a much less respectable companion of industry than economics, and the themes of ideological community hardly ever were as important to the business community as teachings and research on market operations. The lines R-P_C and T-P_C in figure 2, phase 3, should thus be seen as much more attenuated than in figure 1, which represents the position of economics in our sociomatrix.

Another very important difference between sociology and economics manifests itself in case (3). Being a scientifically much less developed discipline than economics, sociology (as adopted from the USA) could not as easily as neo-classical economic theory resist the challenge generated by new and alternative theoretical frameworks and paradigms of scientific work. Student influence on course content, and then on research priorities was much more strongly felt in sociology than in economics, I believe. (U. Himmelstrand, 1974). But of course the champions of established sociology did not give up at once, and have not yet capitulated at some of our sociology departments. In the early seventies conflicts were rampant between sociological teachers of different persuasions, one side being supported by students and the other side usually supported by faculty boards and university administrations. Since I am making these references to the development of Swedish sociology only to illuminate how one could study the social relations of academic production, I will not here spend more time on detailing historical events. Theoretically more interesting is to look at some of the mechanisms which explain the transition from phase (3) in figure 2 which represents this period of internal conflicts among teachers and researchers in the sociology departments of the early seventies, to a new phase characterized by isolation and non-collaboration between teachers and researchers within sociology. This transition took place in at least two different ways, I believe.

One transition was initiated by the fact that gifted graduate students cum teaching assistants who were looking for scientific innovation and social relevance in sociology, found the clashes within the teaching establishment so improductive that they turned to full-time post-graduate study and research. In Sweden movement in this direction was further encouraged or even necessitated by the fact that student numbers dropped rather abruptly after 1972 which sharply reduced the need for teaching assistants in spite of the fact that new courses adjusted specifically to vocational and professional needs of society (YRK-kurser) were added to the syllabus.

While these young people were a minority - even if a significant one - in the teaching establishment they now became a majority among researchers. With the help of a few like-minded more senior researchers they could more or less take over the research sector in several sociology departments. This was further facilitated by certain "superstructural" factors (see below): The existence of autonomous funding agencies were important. While completely dominated by professors, they were still willing to grant some little money to "deviant" research as long as it looked reasonably serious and competent, and did not use a too offending terminology. Also sectorial state financing was involved in some cases of this nature, and also financing from corporate bodies including both representatives of capital and labour (for instance Arbetarskyddsfonden = the Swedish Work Environment Fund). I will have more to say about problems of this kind of financing later on. Here the point to be emphasized is the new social relationship of non-collaboration or even conflict which emerged between teachers and researchers in some sociology departments, and probably also in other social science departments facing the same kinds of contradictions and constraints. In figure 2 this new triangular relationship has been depicted in version (a) of case 4.

Another version (b) of this new pattern is also depicted for case 4 in figure 2. Here researchers are well financed by industrial and sectorial state agencies, while more autonomous financing providing at least seed-money for unconventional and presumably innovative research is less available, or at least much less attractive than the wealth of money available from industry and government sectorial agencies. This wealth also makes research more attractive than teaching to sociologists with a conventional approach. The "deviants" - Marxists or non-Marxists - here flock to vacated teaching positions. Intellectual development of the discipline thus rests with teachers, not with researchers. Because of restrictions of time and money this further intellectual development of the discipline will not involve much empirical work but will be mainly theoretical, and rather far removed from the immediate practical needs of society. Depending on the intellectual quality of those involved, and the actual need for further theoretical rather than theoretical cum empirical development of the discipline, this pattern could lead either to important theoretical innovations or to increasingly doctrinaire positions. I have been told that the type of triangular relationship indicated in 4 (b) is rather common in British sociology departments. Most new intellectual contributions to sociology in England come from people who earn their living as university teachers, but with a more favourable staff-student ratio than we have in Sweden. In Sweden the Stockholm department comes closest to this triangular pattern, I believe, even if its intellectual productivity is far less than those of similar British departments of sociology. Again I wish to emphasize that the illustrative cases I have mentioned here are largely hypothetical. These hypotheses can be tested. My main points, however, are theoretical and can be summarized thus:

Rather harmonic social relations of academic production may characterize a certain field of science when the problematic of this particular field is well developed and coincides with the problematic understood as most significant by significant decision-makers outside the "academic community" (see figure 1, case 1). Under these conditions it would seem quite easy to fulfil van de Vall's optimal conditions for effective applied research.

The emergence of more disharmonic relations is a result of changing concepts of this problematic among academics, or among practitioners, or among both, if these changes work in opposite directions.

In the illustrative cases I have mentioned the change of problematic was initiated in practical life outside the academic community - through increasing contradictions within the capitalist order, and through the increasing visibility of neo-colonial dependency and imperialist violence. The mediators of these external events to the academic community were students and younger scholars, particularly in less well established and paradigmatically less crystalized disciplines.

The paradigmatic conflicts emerging within the academic community were found originally both within the teaching staff and among researchers. By movement of people between these two categories of actors, the conflicts within these categories were replaced by conflicts or at least non-collaboration between them; teachers no longer teach students the kind of materials which make them competent for the kind of research which at the same time predominates, and vice versa.

This movement of people (and the consequent paradigmatic cleavage emerging between researchers and teaching staff) takes place not only in response to the improductive nature of the conflicts within these categories but also in response to certain economic incentives of research funding, and the disincentives of teaching created by decreasing student numbers and consequent reductions in junior teaching staffs. Depending on the combination of different kinds of research funding and teaching incentives or disincentives, we may find the intellectual development of a discipline to rest either with researchers or with the teaching staff. Where both research and teaching disincentives are absent the paradigmatic cleavage between researchers and teaching staff may not develop to the same extent; conflicts within these categories will then to some extent remain.

I have not been saying that the disharmonies and contradictions emerging in the triangular social relations of academic production always are due to events taking place outside the academic community. In the natural sciences we can find examples of theoretical and empirical anomalies, made visible within the academic community, which not only create clashes among and between teachers and researchers, but also disturb old relationships with practitioners (see below). What I wish to say here, however, is that practical anomalies pertaining to the operation of the external social, political and economic order probably are more effective in causing contradictions within social science disciplines.

One reason for this is probably the following simple fact: the social sciences are not generally rigorous enough, theoretically or methodologically, to allow a precise identification of theoretical and empirical anomalies. However, I believe that there is a stronger reason. The object of social science - society - may contain contradictions and conflicts of an explicitly economic and political nature which can be seen in different perspectives. These different perspectives again are of an economic or political, not a scientific nature; they cannot be judged as either true or false in a scientific sense. When certain social conflicts or structural contradictions in society become more pronounced, and the forces of one side gain strength in terms of numbers and moral or political support, then existing theoretical models may increasingly seem irrelevant. They seem increasingly irrelevant because they neglect the conflicts of society, and apply a perspective which blocks the scientific development of alternative models more relevant for an understanding of the current situation, and for the kind of social practice needed in a context of contradiction and conflict. These alternative models are thus prevented from becoming as stringent and well grounded as older more well established models, by the resistance generated within the academic community itself.

In a case like this the new alternative model, once it starts to develop, could be seen not as an improvement of an older approach in response to its internal problems, its neglects or "openings" (Björn Eriksson, 1975: 115), but rather as a qualitative break with the old approach in response to its external and practical anomalies. Even though I take this to be a rather typical case of "revolutions" within the social sciences, similar processes of change may also be found within the natural sciences. As we will see in the next section the concerns of some contemporary natural scientists with local, global or even more extensive systems (ecosystems, the biosphere, etc.) also may imply a response to what might be interpreted as external, practical ecological or biological anomalies rather than to internal theoretical and methodological problems. As a result of this new external influence, the natural science community may also come to develop conflicts between or within their teaching or research staffs similar to those so conspicuous among social scientists.

(4) Processes Affecting the Interplay of Forces and Relations of Academic Production. So far I have mainly applied an actor perspective in my analysis. But actors are "bearers" of underlying processes. In this section I will concentrate on such processes relating to various forces of academic production. Whereas we may speak of conflicts between actors, we speak of contradictions between processes.

As I have indicated already the "forces" of academic production can be specified under three rubrics: theoretical issues, man-power competence, and tools or instruments of research. I can only give a few examples of processes involved in the development of the forces of academic production in these three areas:

(a) Generalization of given conceptual frameworks to wider areas of application takes place for instance when economic theory and concepts of cost-benefit analysis are applied outside the traditional field of economics, for instance with respect to education (I. Ståhl, 1974). Whether this should be considered an instance of unjustified theoretical "imperialism", or as a justified theoretical expansion of a discipline will not be discussed in this context.

(b) *Innovative conceptual incorporation* of new and expanded fields of research can be illustrated with the development of interdisciplinary approaches to broader systemic aspects of the biosphere, eco-systems, political economies, international dependency and underdevelopment etc. The main difference between process (b) and process (a) is that (b) refuses to stay within the *given* conceptual framework of *one* discipline, and rather develops new concepts to deal with *systemic* macro-relationships involving *several* desciplines.

(c) *Innovative conceptual contraction* is a process which implies a "zooming in" on micro-events, and a development of new conceptual frameworks on this micro-level. Such conceptual contraction may take place either dialectically, in opposition to the superficiality of broader macro models, or may be generated on the basis of such macro models themselves in response to a need for specifying in more detail some pivotal or key functions or branching points in flows of macro-events. The study of genetic codes and DNA molecules could be interpreted as a case of innovative conceptual contraction generated by a need to understand in more detail some key functions in biological evolution and genetics.

(d) *Cycles of conceptual incorporation and contraction* could be treated as a separate process distinguished from (b) and (c). Most disciplines seem to benefit from going through such cycles, but contradictions in the academic mode of production could seriously hamper this kind of cyclical development (see below).

(e) In some academic fields like education, medicine and pharmacology research is partly aimed at *exploring the practical effectiveness and secondary effects* of certain treatments and substances. Since practical reality is not usually compartmentalized the way academic disciplines are, such academic fields of applied research could possibly benefit a great deal from interdisciplinary "cycles of conceptual incorporation and contraction" - process (e) - systematically integrating the conceptual levels and domains involved. But often this problem is rather tackled by utilizing non-integrated ad hoc assumptions of a more limited, sectorial nature (K.G. Ahlström, 1974:16). The kind of knowledge thus acquired is often of limited value from the point of view of scientific development, adapted as it is to increase the effectiveness of usually already established sectorial treatments and practices.

The five processes mentioned so far, of which the first process would seem to contradict (b), (c) and (d), all relate to the development of knowledge. The following three relate to the development of competence.

(f) The reproduction of the paradigms of normal science in teaching and laboratory instruction would seem to be the dominant process in the development of scientific competence. Thomas Kuhn has pointed out that prevailing paradigms usually are most clearly rendered in commonly used elementary textbooks. A presentation of the theoretical and empirical anomalies of such paradigms is usually introduced only at a later stage. This is logical since "scientific revolutions" are impossible unless prevailing paradigms are first properly developed and understood. But there are also pedagogical reasons for emphasizing established paradigms in elementary textbooks. They are better developed, more logically consistent and therefore less confusing, easier to explain and understand.

(g) However, the building of competence at institutions of higher education and learning concerns not only scientific competence but also competence practically useful in professional and vocational contexts outside universities. When universities were first created many hundred years ago their main functions seem to have been the development of this kind of practical competence. The clergy, government administrators, teachers and technicians of various kinds were trained at universities. This is still a main task of our institutions of higher education. In some cases institutions such as teacher training colleges and schools of social work were separated from universities. In Sweden in recent years this separation of training for practical and research competence has been criticized and in fact reversed; practical competence, it is maintained, should be developed in a context of research (forskningsanknytning) to prevent an uninformed, rigid and conservative reproduction of practical competence. Teacher training colleges incorporate educational research, and universities teach practically oriented courses (YRK-kurser). Whether these practically oriented university courses really assure "forskningsanknytning" that is a fruitful relationship to research in relevant fields, is an open question.3)

(h) Intellectual clarification and explication of scientific concepts and procedures is an educational technique in the development of competence relating back to the "maieutic" delivery of insight practiced by Socrates. It may or may not contradict the other processes of competence building. High student-staff ratios definitely constrain this type of process. 4)

(i) The development of instruments, measurement and processing techniques for research is a process which would deserve more space than I can provide in this paper. Obviously such development - which may also include the development of new types of mathematics - is often crucial for scientific innovation. An immanent scientific break-through may have to wait until the proper type of logical, mathematical, measurement or processing techniques have been developed. But we may also find instances where an existing technique, elevated to the rank of final arbiter in establishing scientific truth, prevents scientific innovation. The technique is allowed to define what is a meaningful scientific problematic, rather than the other way around. Since this implies that the means of research have been made into aims, we could perhaps distinguish this as a separate process:

(j) Technical ritualism

Having listed a number of processes affecting the development of the forces of academic production, a second step in the analysis of contradictions in scientific development is to construct a matrix of these processes, answering the question to what extent these various processes tend to be contradictory, compatible or even mutually supportive. With regard to some of the cells in the matrix this question can be answered theoretically without much knowledge of the particular discipline involved; in other cases no answer can be given without a detailed knowledge of the current situation of particular disciplines in particular institutions of higher education and learning.

We will not here present such a matrix with ten rows and columns, but only mention a few examples pulled out of such a matrix. For instance, it would seem obvious that processes (a) and (b) are contradictory: what I have called (b) innovative conceptual incorporation and expansion contradicts (a) generalization of given frameworks into new areas of application. Similarly process (b) would seem to be contradicted by process (f); a reproduction of the paradigms of "normal science" in academic teaching and instruction may prevent the development of more broad-ranging systemic conceptions implied by what we have called innovative conceptual incorporation and expansion. There are also good reasons to believe that an emphasis on (g), reproduction of practical competence, is incompatible with an emphasis on (b) innovative conceptual incorporation and expansion. The division of labour outside the academic community, and sectorial R&D activities related to this division of labour, by definition emphasize piecemeal and sectorial perspectives rather than the broad-ranging systemic perspective involved under (b). A systematic social science analysis of the increasing interdependence between technological, economic, social and psychological aspects of the capitalist order, for instance, does not easily fit into the compartmentalized structures of technological, economic and political decision-making in our society. Similarly, the existing sectorial division of labour in the field of environmental issues is usually not adequate for tackling the more systemic cross-sectoral aspects of ecosystems and the biosphere. Natural scientists concerned with such broad-ranging systemic aspects will thus find it difficult to relate meaningfully to practitioners, and may even be criticized by the business community and government agencies for being too utopian in their conceptions of scientific applications. - Hopefully these illustrations will help the reader to grasp how contradictions can be identified in the 10x10 process matrix I have suggested.

The kind of process matrix indicated can be used as a theoretical guide to descriptive empirical studies of the types of contradictions and compatibilities existing among forces of academic production. Secondly, having established such empirical variations, we may go on to ask what factors - internal cognitive factors of scientific development and/or factors relating to the internal and external social relations of academic production - account for variations in types of contradictions and compatibilities. We may ask where and to what extent certain social relations of academic production set the stage for the emergence of contradictions, or rather turn out to be the result of "intrinsic" theoretical developments within certain academic disciplines. The way I have stated this question should make it obvious that I am completely open as to the priority of internal or external factors in determining the rate and direction of scientific innovation. I share the doubts of many analysts with regard to the meaning of asking questions about determination "in the last instance" 5) even when economic and social development is concerned, and much more so in the context of scientific development and innovation.

Marxian influences have been crucial for my thinking on institutions of higher education and learning mainly in two respects: I think it is highly important to focus attention on the emergence of "contradictions". I also think that there as a tendency, in academic as well as capitalist industrial modes of production, for social relations to change from being "forms of development" of productive forces to becoming "fetters" upon that development.[6)] I will now turn to a brief discussion of contradictions which appear as fetters upon academic forces of production imposed by social relations of academic production.

(5) Incompatibilities between Forces and Social Relations of Academic Production. In the previous section I have outlined an approach for the analysis of contradictions *among* forces of academic production. This constitutes a deviation from the way in which the term "contradiction" is used in Marxist analyses. Marxists do not speak of contradictions *among* forces of production; they only recognize contradictions *between* forces *and* relations of production. My deviation from this Marxist analytical pattern probably reflects the fact that academic modes of production are more complex and subtle than modes of production within the economy.

I can conceive of two ways in which social relations of academic production might act as a "fetter" upon the development of the forces of academic production, that is on scientific development: a more passive and a more active way.

The more passive notion of contradictions between forces and relations of academic production could be formulated by way of the following definition:

A "passive" contradiction *between* forces *and* relations of academic production is indicated when contradictions hampering scientific development emerge *among* forces of academic production *without any corrective response at the level of social relations of academic production*.

A *first* step in operationalizing this preliminary definition of "passive" contradictions between forces and relations of academic production could be taken by relating the process matrix suggested in the previous section to the "sociometric" actor matrices indicated earlier in figures 1 and 2 (see p. 88 and 93). Actors are "bearers of processes, as I have indicated earlier, and they can therefore be linked to various points in the process matrix. If (1) only contradictory cells in the process matrix are "manned" by significant actors opposing each other in conflict, while cells representing compatible or mutually supportive processes are largely "unmanned" by significant actors, and if (2) there are no other structures fully devoted to the resolution of these conflicts and contradictions, then we have a case of passive contradictions between the forces and social relations of academic production. There are virtually no actors involved in compatible or mutually supportive processes, and no social relations rectifying this situation.

"Zooming out" from this kind of observation we could then launch a search for the historical, organizational and other processes which seem to bring about this kind of contradictory situation. An important consideration in that context is the power relationship between conflicting sets of actors, and the degree of crystallization of conflict. A conflict is crystallized to the extent that different actors appear on the opposite sides of contradictions, and is non-crystallized to the extent that the same actors are involved on both sides of a contradiction. 7) The likelihood of various kinds of conflict resolution or forms of struggle will depend on power relations and degreee of crystallization of conflict.

In an orthodox sense there is nothing dialectical about the approach just indicated. The kind of analysis suggested is rather an instance of structural-functional conflict analysis. To make it more dialectical - a personal predilection of mine - is theoretically meaningful only under certain conditions. A more fullfledged dialectical model requires the identification of (1) a set of dominant actors who have an objective interest in reproducing the given academic mode of production, (2) a set of productive resources and processes which, in the course of their development, become increasingly constrained and thwarted by the given mode of production, and (3) a set of dependent or subordinated actors who are bearers of these constrained processes, and have an objective interest in the removal of these constraints and in the transformation of the given mode of production. Furthermore, it is required (4) that both actors, interests and constraints as mentioned under (1), (2) and (3) derive from processes of distribution and differentiation inherent in the given unit, that is in the academic mode of production itself, rather than being introduced from outside the system.[8)]

If universities conform to the first three but not the fourth requirement, they cannot meaningfully be submitted to a genuine dialectical analysis. In extreme cases, and at certain historical junctures, these four prerequisites of a full-fledged dialectical analysis may have been at least partially fulfilled - for instance in relationships between senior professorial staff, junior research and teaching staff and students. However, I think it is fair to say that such cases are an exception rather than the rule; in most contemporary Western universities all of these prerequisites would certainly not be fulfilled.

It would thus seem that a genuine dialectical analysis, in the sense indicated above, is unjustified with regard to institutions of higher education and learning. A study of process-contradictions and related actor-conflicts and power differentials carried out within the framework of a structural-functional conflict model, as suggested above, would seem more fruitful. The need for a dialectical analysis may still remain with regard to external society and its relations to institutions of higher education and learning.

Having concluded that it is unjustified to pursue a complete and exhaustive dialectical analysis of institutions of higher education and learning, it remains for us to improve on the kind of structural-functional analysis indicated above.

The actor-process matrix suggested still leaves a number of questions unanswered - at least in cases where process-contradictions and actor-conflicts happen to be more pronounced. First we could ask ourselves whether it is possible to pinpoint a positive or "progressive" side in the process-contradictions and actor conflicts identified in the process-actor matrices. This is not simply a political question or a question of ideologically based science policy. It is a question which must be answered largely on the basis of a scientific analysis combining elements from international and local science history and sociology of knowledge (see below).

Secondly, we might ask whether there are any processes inherent in given social relations of academic production which automatically tend to strengthen and mobilize the power of the "progressive" side in a manner which eventually will lead to a breakthrough, and a "bursting asunder" of the "fetters" which have hampered innovative scientific development.

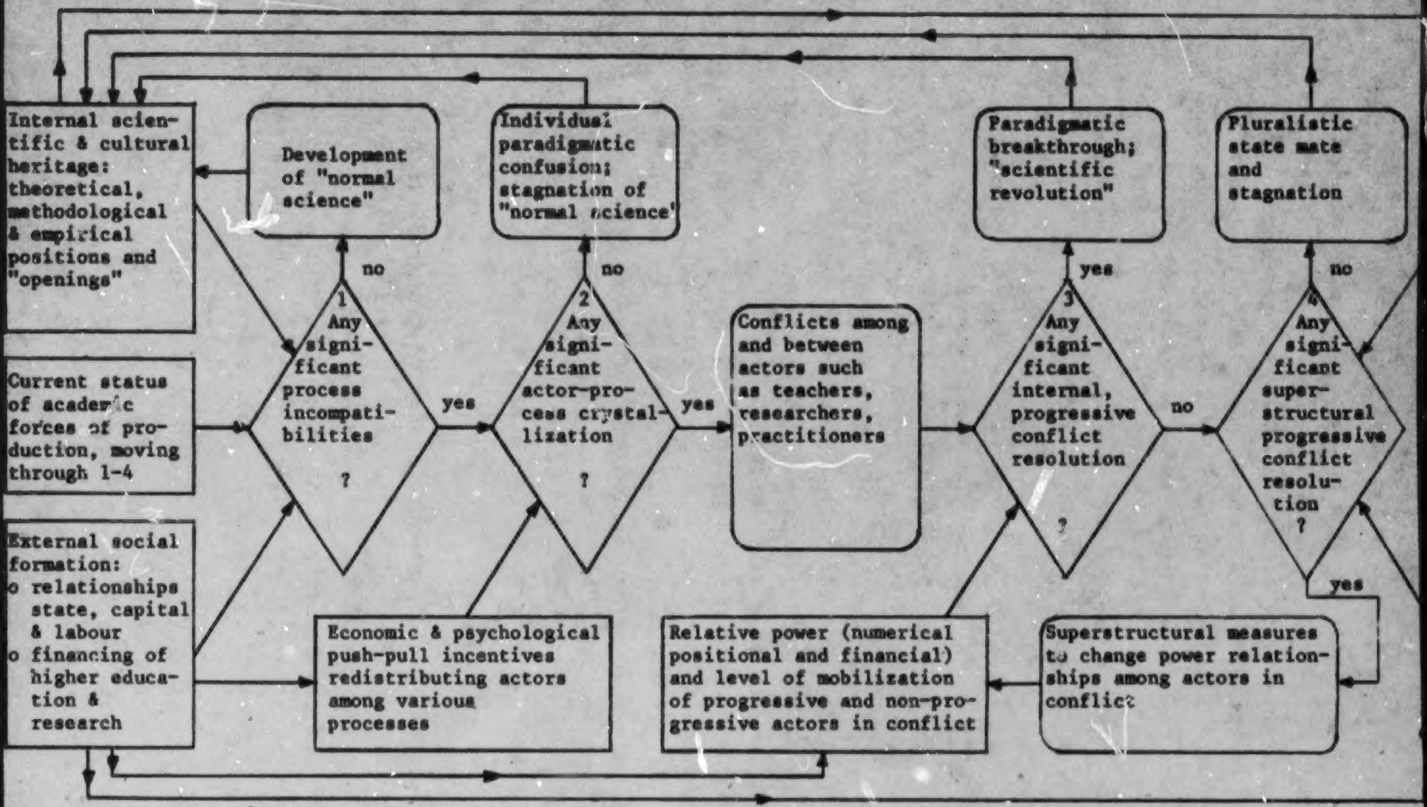
Thirdly, if such automatic "internal" processes eliminating or reducing the constraining features of contradictions and conflicts are found to be absent in a given mode of academic production, we may ask whether there are any "external" superstructural mechanisms of authoritative decision-making and resource allocation which can effectively deal with unsettled contradictions and conflicts, or whether "non-decision" and the garbage-can are predominant in the relevant superstructures.

In trying to answer this third question we may arrive at the conjecture that the absence of external superstructural arrangements to deal with unsettled contradictions and conflicts, far from being a coincidence is part of a design to constrain and even repress the progressive side in the conflicts involved, in the interests of decision-makers in government or business. If this conjecture is found reasonably true, we could speak about an active rather than a passive form of contradiction between forces and social relations of academic production.

In figure 3 I present a simplified flow-chart summarizing and integrating the type of research questions raised so far in this section of the paper. The diamond-shaped figures represent branching-points, and the arrows pointing toward the side of such a "diamond" indicates some possible determinants of the direction of the flow at such branching-points. The kind of determinants possibly involved are suggested in the boxes from which these "determinant" arrows originate.

In a simplified binary fashion diamond 1 represents the much more complex process matrix: are the most important processes in the matrix incompatible? Yes or no? Diamond 2 represents degree of crystallization in the process-actor matrix. Diamond 3 represents internal processes of progressive conflict resolution, and diamond 4 external superstructural processes of progressive conflict resolution. Various outcomes of various flow distributions are indicated in boxes at the end of outflow arrows from the diamond branching-points.

Figure 3. Flow-chart representing alternative change-patterns in academic mode of production


Internal scientific & cultural heritage: theoretical, methodological & empirical positions and "openings"
Current status of academic forces of production, moving through 1-4
External social formation:
o relationships state, capital & labour
o financing of higher education & research
Development of "normal science"
no
1 Any significant process incompatibilities ?
yes
Individual paradigmatic confusion; stagnation of "normal science"
no
2 Any significant actor-process crystallization ?
yes
Economic & psychological push-pull incentives redistributing actors among various processes
Conflicts among and between actors such as teachers, researchers, practitioners
Paradigmatic breakthrough; "scientific revolution"
yes
3 Any significant internal, progressive conflict resolution ?
no
Relative power (numerical positional and financial) and level of mobilization of progressive and non-progressive actors in conflict
Pluralistic state mate and stagnation
no
4 Any significant superstructural progressive conflict resolution ?
yes
Superstructural measures to change power relationships among actors in conflict

NOTE: Rectangular boxes indicate determinants influencing the flow at branching points (diamond-shaped).
Boxes with rounded corners indicate intermediate changes or outcomes.

The flow-chart is useful not only as a systematic and integrated representation of a research strategy for obtaining a coherent view of various aspects of what I have called the planning object of educational planning (p. 83). In the planning context the flow-chart could also be used as a check-list for answering questions of what has been done and what has been neglected in the planning exercise.

In the next few paragraphs I will briefly discuss some of the questions raised within this flow-chart.

(a) How to identify the "progressive" side of contradictions and conflicts. A university cannot operate without the production of basic competence through teaching, and without the production of knowledge through research. Some would maintain that research is the more basic function, since the knowledge produced in research provides the basic content of teaching. However, university teachers could certainly contest this stand-point by pointing out that the basic competence conveyed by teaching is a basic prerequisite for research. Therefore, in a conflict between teaching and research, it would seem a bit problematic to say that research always constitutes the progressive side in the conflict. Obviously then conclusions concerning what is the progressive side must be based on other considerations. I would suggest criteria of two kinds: intellectual and historical.

If research in a department is adapted primarily to narrow sectorial R&D-needs of public administration and business while teachers take the brunt of responsibility for the intellectual development of the discipline (see my discussion p. 97), then teaching certainly should be considered the progressive side in a conflict between teaching and research.

Another consideration in cases like these is financial. If the progressive side - teaching in this case - struggles against great odds with very scarce resources in manpower and working-time, its very need and struggle for financial resources should give even more weight to the conclusion that this is the side which deserves increasing support in the interest of scientific progress.

In other cases we may find that research accounts for intellectual development while teaching is oriented mainly to supplying competence for roles in business and public administration, or is concerned primarily with reproducing the increasingly outdated scientific paradigms of "normal science". Here research must be considered the progressive element.

However, the fact that the paradigm transmitted in teaching reproduces the established structures of "normal science" is not in itself a sufficient criterion for rating the teaching task in such a case as less progressive than research. Here we must bring a *historical* criterion into the picture. If the established paradigm is still in a *formative* stage with a lot of theoretical and empirical puzzles left unresolved and unchallenged, and if there is no avant-garde of practitioners outside the university who produce revolutionizing and scientifically challenging ideas and practices, then researchers claiming to be "scientific revolutionaries" are not necessarily progressive elements but simply "anarchists" reacting emotionally against the strictures of normal scientific work (Björn Eriksson, 1975:141). In this kind of historical situation those who teach and carry on research within the framework of "normal science" are thus on the progressive side - they are carrying out the intellectual job required - whereas "scientific revolutionaries" just divert attention from the task at hand.

However, Björn Eriksson (*loc.cit.*) warns against a too rash judgement on scientific "anarchism". We cannot "exclude the possibility that the anarchic situation may be a necessary precondition or starting-point for a favourable development of knowledge - - - the only solution if the development and change of knowledge have become so rigid that existing openings cannot provide knowledge with new possibilities."

In a historical situation where the teaching and research of a certain scientific discipline has become stagnant and constraining within the framework of a mature and fully developed paradigm which however has become obsolete in relationship to the innovations introduced by practitioners in the domain of that very discipline itself, in that kind of historical situation a deviant "revolutionary" group of researchers and perhaps teachers, allowing innovative practitioners in politics and economy to set the agenda for their research and teaching, are certainly the more progressive element, but often precariously exposed to censure by academic establishment.9)

(b) Are there "automatic" processes of adjustment within the academic mode of production which facilitate scientific progress and innovation? The answer is often no. For instance, in a situation where the universities experience a strongly increasing demand for research on various economic, social and educational problems in our society, there are no mechanisms swiftly and efficiently adjusting the supply of scientific competence, and the volume of competence-building manpower to all these obvious needs. Professors and senior "research" staffs are too few and too absorbed in other tasks than research. Graduate students with a limited experience, working toward their doctoral degrees, are prematurely drawn into research projects financed by sectors of public administration or business. If occasionally they are able to contribute to scientific development as well as to the R&D-needs of society this is exceptional.

A leading Swedish economist, Ingemar Ståhl (1974), has illuminated this problem by suggesting that the superior capability for optimal allocation of scarce resource inherent in market mechanisms should be introduced into the academic mode of production. Ståhl's proposal is extremely stimulating and thought-provoking - but completely unfeasible in political terms, and unworkable in terms of progressive scientific and social development in a situation characterized by immense inequalities in the capability to buy research, and to profit from research, in a sociaty already troubled with conflicts and inequalities in other respects.

In order to provide an empirical basis for politically more feasible solutions it might be worth-while to survey the demand-supply discrepancies in our present academic mode of production, with due consideration for demands which are too weak financially to be able to buy research on the market. Such a survey should be supplemented with a survey of the mechanisms of demand-supply adjustments in existence, and those conspicuous by their absence.

Probably such surveys could not be restricted to the academic mode of production as such. The political and administrative superstructure of universities must be brought into the picture. The question arises what can be done on the superstructural level, and what is neglected with respect to adjusting demand-supply discrepancies. I will return to this question briefly in the next section of this paper which deals with the superstructural level. Meanwhile I maintain that it is of considerable theoretical and practical interest to explore whether one could possibly, within the academic mode of production itself, identify some kind of non-administrative, mobilizational processes of "struggle", or criss-cross processes of decrystallization and depolarization which reduce, or rather conceal and prolong incompatibilities within process-actor matrices. One example could be provided by looking at the mobilization of students in the late sixties and early seventies.

Often we hear about the destructive effects of student mobilization and struggle. However, I think that a closer empirical study of those turbulent years would reveal that the contradictions manifested in student mobilization, under certain conditions, contributed to break down stagnant scientific paradigms, to introduce new scientifically challenging issues, and to stimulate intellectual development in neglected fields. This was certainly my own personal experience as a sociology professor in the early seventies. It would seem worth-while to carry out empirical studies of the conditions possibly determining whether student mobilization had this kind of progressive and creative impact on scientific development, or had a destructive effect by distracting attention from the intellectual tasks at hand, and by causing a formation of reaction within the so-called academic community.

In more general terms this empirical problem could be seen as a special instance of the problem whether increased contradictions and conflicts in process-actor matrices stifles scientific creativity, or calls forth a regrouping and mobilization of actors, without administrative superstructural interventions, in such a way that the progressive side is strengthened, and a scientific breakthrough is effected.

(6) The Political and Administrative Superstructure of Higher Education and Learning. In his history of the University of Uppsala, Sten Lindroth (1976:232, 237, 242) has pointed out that student numbers increased nearly fourfold between 1955 and 1975, while professors did not even double in numbers. The university administration, however, became nine times as large during these years. A comparative study of universities with regard to these student, professorial and administrative staff ratios correlated with indicators of scientific productivity and innovation may or may not yield significant correlations, positive or negative. The historical position occupied by various disciplines with respect to scientific development, and their access to external research funds at the right moment of scientific creativity, may be more important than these student-professor-administrator ratios, but still these ratios may turn out to contribute in some measure to the total variance of scientific productivity and innovation.

Against the background of my previous discussion of process-actor matrices, and of problems left unresolved because of the absence of decision-making structures devoted to such problems, another line of research recommends itself. Taking off from empirical specifications of process-actor matrices of specific disciplines at specific universities, and from empirical flow-distributions in the flow-chart suggested in figure 3 (p. 111) we may ask the question: To what extent are activities and decisions in the political and administrative superstructure of universities actually devoted to exploring and tackling the contradictions and conflicts found in process-actor matrices, in a manner suited to a progressive development of the disciplines and universities involved? [10]

Technically this implies a superimposition of an empirically specified process-actor matrix on the superstructural level, and a study of the extent to which the contradictions and conflicts in the process-actor matrix appear also in the problem-solving activities of the superstructure. In the ideal case the issues reflected in the process-actor matrix are also issues in the superstructure, and the superstructure allocates resources to the progressive side in the contradictions and conflicts manifested in the process-actor matrix. In the worst possible case we find the obverse of similarity between the issue-profiles manifested in the process-actor matrix, and on the superstructural level.

The empirical studies of superstructural issue-profile similarity suggested here are descriptive in nature in spite of the fact that the variables involved have been deducted from a theoretical analysis of the forces and social relations of academic production. A more explanatory approach would have to relate the actual operation of the academic superstructure to the rest of society empirically as well as theoretically. Causal inference on the basis of empirical data alone is extremely difficult if not impossible in macro-sociological analysis, because of the small number of macro-units usually involved. In this macro-sociological context, a causal explanatory approach, to a much higher extent than in micro-sociological multi-variate analyses, depends on systematic and coherent theory. Conjectures derived from such theoretical frameworks may or may not be refuted by empirical data.

One theoretical framework focussing on educational institutions assumes that their main function is to reproduce the existing social order in society at large (P. Bourdieu & J.C. Passeron, 1977). Empirical support or refutation of such theories could be obtained by extending the method of issue-similarity analysis suggested above. The issue-profiles established empirically in process-actor matrices within the academic mode of production, and in university administrations, and the resource allocation related to such issues, could be compared with issue-profiles and resource allocation in the political and administrative superstructure, and in business organizations concerned with research and development. If such external issue-profiles and resource allocation patterns were found to imply an awareness of contradictions and conflicts in the academic mode of production, and an awareness of how to identify the progressive side, and how to allocate resources to encourage progressive scientific development, then theories about educational institutions as serving only to reproduce our capitalist social order would seem to have been refuted. 11)

Summary of Research Programme

The process-actor matrix provides the main focal point for the research programme on the academic mode of production here suggested. This matrix is derived from a matrix of ten interrelated processes, and another matrix of actors such as students, teachers, researchers, and pratitioners in the spheres of state, capital and labour. Actor roles can be specified in terms of the processes of which each actor is a bearer. It is this relationship which enables us to construct a process-actor matrix; the process and the actor matrices are related to each other in terms of specific actors as bearers of specific processes.

For more specific research purposes one could certainly add actors who practice the life of the pensioner, the unemployed or marginalized, the addict or the outcast - none of them active in the spheres of state, capital and labour. Research rarely takes the perspective of these kinds of "practitioners". They are usually seen only as objects for state welfare policies rather than as active subjects.

The processes in the process matrix are derived from certain considerations of the "forces of academic production"; and the actors who are bearers of these processes are seen as involved in the "social relations of academic production".

In the *process matrix* we can distinguish between contradictory and compatible processes; and the *actors* who are bearers of these processes could then be seen as involved in conflict or non-conflict in a *process-actor* matrix. In a sense the process matrix is more basic than the actor matrix. The objective incompatibility of several processes in the process matrix can be deducted *internally* from the definitions of these processes, whereas conclusions regarding objective conflicts of interest between actors in the actor matrix must be based on *external* considerations of the compatibility or incompatibility of the processes of which these actors are bearers.

We can specify a simple and a complex process-actor matrix. In the simpler version single processes and single actors are cross-related. This kind of matrix simply indicates what actors are bearers of what processes. It could thus be called a *process-bearer* matrix. In the more complex version (which is better suited for a conflict analysis) all possible actor *relationships* could appear, say, in the columns while process *contradictions* or *compatibilities* could define the rows in the matrix. Each single cell in the previously mentioned process-matrix thus defines a row in this complex process-actor matrix. To the extent that actor-pairs in the columns of this kind of matrix are bearers of process-contradictions as represented in the rows of the matrix, we speak of *actor-process crystallization*. Given a certain extent of process-contradictions, the higher the actor-process crystallization, the more *externalized* are the corresponding actor conflicts; and the lower the actor-process crystallization, the more internalized are the conflicts within the actors involved.

But the process-actor matrix is useful not only for studies of the academic mode of production. It also lends itself to a study of interrelations between this mode of production on the one hand, and university or societal, political and administrative superstructures on the other hand. Here I have introduced the concepts of issue similarity and progressive resource allocations as conceptual tools to relate superstructures to the basis of academic production.

Taxonomically inclined researchers may be tempted to use the process-actor matrix simply as a taxonomical device, and to spend so much time and effort on developing typologies of various academic modes of production that more dynamic and historical aspects are lost out of sight. As a corrective against this kind of taxonomical approach I would recommend a combination of the process-actor matrix with an approach formulated by Björn Eriksson (1975) and devoted to an empirical sociology of knowledge. Occasionally I have made references to this important work in my discussion. As far as I know this is one of the most systematic and penetrating attempt made to formulate a "strategy for a sociological knowledge-analysis". Björn Eriksson's approach is "intended to direct the concrete work of the sociology of knowledge, to provide the sociologist with questions for analysis, and a frame for these questions. And, perhaps most important, this frame is a logical development of views on the mechanisms of cognitive change which are so common and so wide-spread and self-evident that nearly everyone working with the problems of knowledge accepts them, at least in principle." (op.cit.:151).

To avoid further extending and further complicating this paper, I have not tried to summarize Björn Eriksson's approach in detail, but simply used some of his notions, and made references to his work.

I have also avoided more detailed considerations of empirical research methods on academic modes of production. An imaginative and knowledgeable reader with methodological interests can easily put his finger on variables which are easy or difficult to operationalize within the framework suggested here. Here I only wish to make one reference. Gunnar Gelin and his associates (with a grant from UKÄ) have tried out methods for assessing the content of sociology-teaching at Swedish universities 1967-72 in a manner which illuminates the "paradigmatic" development of this discipline. The same study also includes an analysis of how various types of sociologically trained practitioners evaluate the usefulness of various sociological specialities, for practical purposes as well as for "understanding society". A factor analysis of usefulness-scores contributed to simplify this study of how practitioners view sociology. This study has been summarized by the present author (Himmelstrand, 1974) with the assistance of Gunnar Gelin.

The kind of theoretical and empirical project suggested would of course be pursued in somewhat different ways depending on whether the R&D perspective or the needs of basic research are emphasized. While still taking off from the theoretical framework here suggested, a R&D-project could probably use the methods of documentation and reporting of decent and honest journalism for covering at least some of the issues and variables suggested by the theoretical framework. 12) Better knowledge about the "planning object" of educational planning thus could be attained without waiting for the conclusion of more protracted academic research.

Concluding Remarks on Relations between Universities and Society

In the beginning of this paper I asked the following question: "How can we attain the most fruitful combination of coherent empirically grounded theory and closeness to "significant" centres of decision-making in relating higher learning and education to the needs of society?" In my discussion of the social relations of academic production (p. 97) I suggested that "Rather harmonic social relations of academic production may characterize a certain field of science when the problematic of this particular field is well developed and coincides with the problematic understood as most significant by significant decision-makers outside the "academic community"."

However I have pointed out that the problematic understood as most significant among significant decision-makers outside the so-called academic community has become less unified in recent years. The perspectives of capital and labour are now more different; the spirit of collaboration (Saltsjöbadsandan) so characteristic of Swedish labour-management relationships for most of the post-war period is now very much in doubt. The state, during the previous social democratic regime, attempted to straddle this cleavage; presently it tends to side with capital. Moreover conflicts have emerged concerning the philosophy of large-scale industrialization and economic growth; significant minority groups of citizen claim that "small is beautiful", and advocate zero-growth and communalistic decentralization.

Regardless of our position on these emerging cleavages, they imply that we no longer can identify one single problematic among the practitioners which are significant agenda-setters and decision-makers in society. Therefore it is no longer always possible to harmonize the problematics of society and the problematics predominant at our universities. If university disciplines internally maintain relatively harmonic social relations among teachers, researchers and students, the scientific paradigms pursued within those social relations are unlikely to harmonize with all the various types of problematics which now has emerged in society. In such cases we usually find harmonic academic relationships only with the problematic favoured by the establishments of business and some segments of public administration. Newly emerging societal perspectives may either be totally unrepresented in the problematics of university disciplines or, if represented, introduces contradictions and conflicts within the universities themselves.

Even though universities are well equipped to resolve intellectual conflicts within given paradigms of "normal science", and sometimes seem to be able to participate in "scientific revolutions" in response to theoretical and empirical anomalies, universities are generally not equipped to handle the practical anomalies manifested when the problematics of society becomes more diversified and contradictory.

A first step to improve the capability of institutions of higher education and learning to deal with such practical anomalies is to launch a research programme, like the one suggested here, to clarify the emerging contradictions and conflicts within the academic mode of production, the absence of mechanisms and superstructures to deal with these problems, and to assess alternative structural and organizational arrangements to improve the situation. Or to put it differently: learn to know your planning object, the University, before you start to plan university reforms.

In the Swedish debate about current university reforms, much of the criticism launched against the first U-68 Commission Report (SOU:1973:2) took off from a conviction that the report was based on inadequate understanding of the unique characteristics of academic teaching and research. The model suggested by the Commission for representation of societal interests in university boards was rejected on the ground that universities require autonomy in order to fulfil their basic functions (T. Segerstedt, 1974). A less extreme version of this criticism maintained that spheres of heteronomy and autonomy could be established within universities where societal interests could claim the right to representation and influence only in the heteronomous sector (S. Gustavsson, 1971). From the point of view of this paper both of these views are a bit beside the point. Instead of discussing the extent to which society should have a right to indirectly influence policies and administration of university teaching and research, one should consider what forms of societal influence are most compatible with the processes of teaching and research at specific historical junctures. Is majority or minority representation of societal interests (established political parties, trade-unions and popular movements) in university boards the best form for exercising influence, compatible with processes of teaching and research? Swedish reformers seem to have an inclination for models of representation and administration in proposing solutions to new problems. Just introduce a representative structure and a bureaucracy, and your problems are solved . . .

I am not questioning the importance of societal representation in university boards. But I would suggest that such representative university boards are quite insufficient to reflect the societal interests and issues which are relevant for scientific and future social development, particularly at historical junctures when the problematics of society is becoming more diversified and contradictory without yet being truly reflected in established political and interest organizations.

Therefore it would seem wise to encourage the creation of contacts between society and university not only the indirect way through university governing bodies but also directly in the form of contacts between scientists and practitioners within the framework of joint projects in the spirit of equal partnership and dialogue (Elvander, Himmelstrand and Lindahl-Kiessling, 1974). Traditional sectorial R&D-projects do not always fulfil these conditions of partnership and dialogue, but rather involve directives from sectorial authorities with researchers in executive roles. Furthermore, the new kind of agenda-setters which have emerged through the diversification of societal problematics and perspectives are usually not in a position to initiate R&D-projects.

However, new arenas of contact between society and university could be built by allocating means for regular meetings between researchers in various interrelated fields, and practitioners of all kinds, established and non-established, preferably at different occasions, for stock-taking and agenda-setting purposes. [13)]

By institutionalizing such forms of contacts between scientists and practitioners every or every other year, and by establishing a secretariat for such contacts, the Swedish instinct for administrative solutions could be satisfied, in spite of the rather informal character I expect to prevail in such contacts. By allowing different disciplines, faculties or interdisciplinary groups at our universities to take their turn in continuous rotation such a secretariat could be meaningfully and continuously occupied.

FOOTNOTES

1) A brilliant analysis of the goals and value premises which have guided Swedish educational policy on the government level is contained in Lena Johansson (1970). As regards the goals of higher education, see the U-68-Commission Report (SOU 1973:2). The Social Policy Commission Report, Socialvården - Mål och Medel (SOU 1974:39) deviates somewhat from this general pattern by explicitly stating that the goals of social policy can be determined only when points of departure, problem loads, social processes and constraints have been explored; they cannot be formulated as "idealistic" value premises without such preknowledge of the field of social policy problems. Research and investigations are here seen not only as ways to specify the means of policy but also to some extent as a way to establish goals and aims of policy.

2) This approach for setting goals and seeking means of educational policy thus requires not only a knowledge of organization theory as it applies to institutions of higher education and learning, but also a study of the sociology of science, and of knowledge. Thomas Kuhn's work (1962), and the critical discussion of his work contained in Lakatos and Musgrave (1970) are relevant here. However, I have found Björn Eriksson's systematic attempt to delineate the problems of an empirical sociology of knowledge (1975) even more helpful.

3) For a discussion of the relationship between research and undergraduate education, see Bengt Abrahamsson (1977).

4) Professor Ference Marton at the Institute of Education, University of Göteborg, has carried out a research project with financial support from UHÄ on "Study Skills and Learning" summarized in a UHÄ R&D report (1976:1) dealing specifically with the formation of complex conceptual structures in undergraduate learning which empirically illuminates the process of "intellectual clarification and explication of scientific concepts" in undergraduate teaching and learning. One of the main results is that holistic comprehension of content facilitates this learning process more than an atomistic comprehension. In a later study Lars-Owe Dahlgren and Ference Marton have applied the same methodology for a study in depth of the comprehension of basic economic concepts. The final report on this study is soon forthcoming.

5) For an interesting, but probably not conclusive, discussion of "determination in the last instance" in Marxist thought, see Cutler, Hindess, Hirst and Houssain (1977), chapter 8.

6) This is the relevant quotation from Karl Marx (1904): "At a certain stage of their development, the material forces of production in society come in conflict with the existing relations of production, or - what is but a legal

expression for the same thing - with the property relations within which they had been at work before. From forms of development of the forces of production, these relations turn into their fetters. Then comes the period of social revolution."

7) The term "crystallization" is here used in the same general sense as in Gerhard Lenski's notion of status-crystallization (1954), except that my focus is on the position of actors on a number of diamensions of academic production rather than on status dimensions.

8) Göran Therborn (1976:393-98) has emphasized that "the unity and struggle of opposites" within a given mode of production is the distinctive feature of Marxian dialectical analysis as compared with a structural-functional analysis of conflicts. Therborn contrasts a dialectical analysis with structural-functional theories on the rise and fall of master races and elites. The circulation of races and elites certainly takes place through conflicts, "but between the rulers and the ruled there is no unity of opposites. The fall of one elite is viewed as the result of internal degeneration and the rise of a stronger force outside it, not of a development in the tie between rulers and ruled." (op.cit.:397).

9) In my view this is the current situation with regard to mainstream economics as a discipline. Neo-classical marginalism with its focus on the operation of market forces is the most developed and mature theoretical approach within the social sciences. But in society the forces of the free and competitive market are increasingly constrained not only by state interventions dealing with the "negative externalities" of industrial production, but even by the operation of the market itself. The market destroys itself by encouraging the oligopolistic or monopolistic growth of the strong and successful. Probably because of this lack of fit between theoretical models and reality, mainstream economists, asked for advice about economic policy, are often heard to add a reservation: "Well, we realize that our advice is politically inopportune, and not particularly feasible - but still it is correct." Economic policy therefore must be formulated without the benefit of a relevant scientific analysis - since the "scientific revolutionaries" among economists (some of them trying to revive and further develop Marxian thought) are not respectable enough.

As regards Marx himself he emerged in a historical situation where political and economic life certainly offered revolutionizing and scientifically challenging new ideas and practices. But simultaneously the science of economics was still in a formative stage, with a lot of unexploited options and challenges available for further development. In a sense Marx was too much ahead of his time; his "scientific revolution" was premature even in terms of his own theory of social transformations. "No social order ever disappears before all the productive forces for which there is room in it have been developed, and new higher relations of production never appear before the material conditions of their existence have matured in the womb of the old society." This diagnosis by Marx (1904) concerning the conditions required for the transformation of capitalism quite clearly made his analysis of capitalism somewhat less relevant, practically speaking, in his own time when the productive forces for which there is room in capitalism had not as yet developed to the fullest.

10) At a conference on research concerning higher education organized by UHÄ in March 1977 several issues related to the emergence of problems in the basis of higher education, and the absence of problem-solving mechanisms in the superstructure were discussed (UHÄ 1977:43 f, 116-121, 148-151).

11) An important problem to be settled before carrying out empirical tests of the reproductive functions of educational institutions is to delineate more clearly what "superstructures" are external and what "superstructures" are part of universities themselves. We may ask for instance where to locate research-grant allocating bodies such as research councils, and the Bank of Sweden Tercentenary Foundation - within the university superstructure or the political and administrative superstructure of society at large? Research councils, with their researcher majorities elected indirectly by the academic community, could be classified with the university superstructure. Sectorial grant-allocating bodies concerned primarily with the R&D projects of government departments, obviously should be included in the superstructure of society at large. Formally speaking, the Bank of Sweden Tercentenary Foundation belongs in that same superstructure, since its board is politically appointed; but on the other hand members of the academic community play such an important role as advisors in grant-allocations that we might as well count this foundation as partly included in the academic superstructure, partly in the superstructure of the society at large. This dual identity would seem to make the Bank of Sweden Tercentenary Foundation a uniqely interesting spot to look for conflicts and compatibilities between official science policy, and the scientific orientations of university researchers.

12) An excellent example of a study combining a theoretical specification of research problems with a rather journalistic type of case-study method could be found in Berg & Östergren (1977), a study on Innovations and Innovation Processes in Higher Education.

13) A set of illuminating and thoughtprovoking case studies of already existing arenas of contact between social scientists in various fields, and practitioners, is presented in E. Dahlström (1976). This report also contains

an inventory of various "types of knowledge" involved in such contacts (p. 50 ff). Dahlström's typology emphasizes content more than the formal attributes emphasized by de Vall (op.cit).

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REPORT FROM DISCUSSION GROUP

GROUP 1 — rapporteur Jan-Erik Lane

The phenomenon that has characterized Swedish higher education as well as other systems of education in recent years is that of change. Since the end of the sixties most higher education systems have undergone various kinds of transformations in both their public and private lives. One way to place the radical reform of Swedish higher education in 1977 in an international context is to focus attention on various aspects of the process of change. The similarities and peculiarities of Swedish higher education compared with other systems may be revealed by such an approach at the same time as a focus on change will point to gaps in our knowledge of what the vast changes in structures and functions have implied for the various parts of the system. A model of HE change may consist of three main categories and their subtypes:

(A) AGENTS OF CHANGE

   (1) Central authority
   (2) Regional authority
   (3) Local institutions
   (4) Intermediate boards
   (5) Basic units
   (6) Individuals
   (7) The Environment

(B) PHASES OF CHANGE
  (1) Pressures and needs for change
  (2) The Launching of change
  (3) The Implementation of change

(C) AREAS OF CHANGE
  (1) Curriculum and methods
  (2) Research priorities
  (3) Organizational structure and decision-making
  (4) Relations to the environment

Some problems crucial in the analysis of HE change may be stated using the above framework:

(P1) What agents are involved in what areas within different phases of change?

(P2) What is the nature of interaction between various agents in typical change processes?

(P3) What are the main patterns of HE change?

(P4) What are the goals and means of HE change?

(P5) Which areas are important in HE change?

In the work of the group Swedish higher education was approached in terms of these problems and their implications for future research into the Swedish system. Reference was frequently made to international experiences and the comparative method was used to place Swedish higher education in a proper perspective, yet the stress was on the implications of the radical reform of 1977.

A. CENTRAL AGENTS

The central authority has a valid function in monitoring HE change (Löwbeer). Though decentralization is a powerful idea in a system of higher education that has been adapted to major societal changes there remain some tasks which are eminently suitable for decision-making at the central level:

(a) Responsiveness to change
(b) Curricula development
(c) Development of various teaching methods
(d) Research priorities within the budgetary process
(e) Continuous supervision of organizational developments
(f) Initiating new processes of change as part of the political process of the system of higher education
(g) Partaking in the launching and implementation of various projects designed to bring about change.

If HE change is to be a real possibility decentralization must not proceed too far. The general value system of a society must possess mechanisms for the initiation of change within the higher education institutions. Moreover, HE change is a function not only of the strategic position of the central authority within the system but also of the state of the environment; in particular, HE change depends on whether the environment experiences growth or is in a steady state (Östergren). The nature and role of the central authority differs in relation to growth and steady state respectively:

(a) Growth - Change by incrementalism
(b) Steady state - Change by reallocation

Maybe in a steady state change can only be achieved through decentralized authority because in a steady state there will be change by cutting down? Who knows best what to cut down on and who wants to do the cutting? The relationships between change/innovation and authority were debated and it was generally accepted that these are somewhat complex. Though decentralization may be the best alternative in a steady state it was suggested that it may not be enough. There was a general recognition of the fact that decentralization may not be a sufficient condition for HE change. In fact, decentralization may be conducive to the very opposite of innovation, namely, to the maintenance of tradition. If the two pairs of concepts are placed side by side there seems to be no good reason to exclude some of the four possible types as unlikely:

Diagram 1. Types of Authority and HE Change

	Innovation	Tradition
Centralization		
Decentralization		

In some situations centralized authority may be necessary to accomplish innovation, whereas decentralized authority may foster a climate of tradition and routine. Though the 1977 reform did imply a significant amount of decentralization the central authorities in fact still possess a number of important tools for the overall control of the Swedish system of higher education (Löwbeer):

(a) Long-term planning mechanisms
(b) Short-term planning mechanisms
(c) Research and development functions
(d) Curriculum innovations

It was suggested that the transformation of authority within the Swedish system of higher education was not only related to the shift from an environment of growth to steady state environment but reflected a more general adaptation of the administrative system of the public sector towards new functions (Brändström). A more sharp distinction has been made between planning and implementation in the administrative system of society placing the planning processes in the hands of the central bureaus and agencies while transferring the implementation of decisions to the local executors. At the same time the traditional distinction between the ministries and the agencies has become less valid as they both become more and more involved in planning.

At the same time as the organizations that make up the central authority may be looked upon as the main source of innovation, these organizations may themselves be seen as part of the higher education system that reacts to environmental pressures for change (Östergren). Changes in the higher education system not only affect the local units that are the main targets of HE reform but also the structure and functions of central authorities. The 1977 reform brought with it important changes in the functions of the state agency for Swedish higher education. The NBUC may formally constitute an amalgamation of some different state agencies but in no way will its functions be a collection of old tasks. There is a significant amount of insecurity attached to the definition of the tasks and purposes of the NBUC, which tasks and purposes deserve urgent study (Östergren).

Internationally there are on the one hand trends that are the very opposite of those in the Swedish system (Cyrech), but on the other hand there are also similar tendencies. In France there has been a development towards more decentralized authority, particularly with regard to the local units and not so much in as far as regional units are concerned. In Germany the Bund has increased its power over the local units, whereas the Länder seem to have decentralized some of their power over the local units. In the United States there is constant move towards centralization both with regard to federal power and with regard to state power. The picture is somewhat more complex as one moves to the binary system of British higher education (Becher). The traditionally autonomous university sector faces increasing interference from various institutions like the UGC and the DES, whereas the polytechnics that are under strict local government authority are trying to move towards more autonomy on the model of the university sector. The results of the international comparisons and the anlysis of authority within the Swedish system were concentrated into two hypotheses:

(1) Decentralized systems encounter forces that work towards centralization
(2) Centralized systems tend to develop towards more decentralization.

B. REGIONAL AGENTS

The structure and functions of the newly created regional boards were mapped out (Brändström). In particular the representation techniques with which the board itself and the educational committees attached to the board are recruited became the focus of debate (Becher). It was considered that the status of these boards needed particular attention, because there seem to be different experiences concerning the activities of these boards on the part of the various regional sectors (six in all).

C. AGENTS AT THE LOCAL LEVEL

An overview was made of the structure and functions of the decision-making system at the institutional level (Ramström). The intermediate boards, i.e. the line committees and the faculty committees, became to a significant extent the focus of interest, because one of the goals of the reform was to create at that level a structure that would be conducive to active and innovative decision-making. According to one analyst what had happened since the introduction of these reforms had not borne out what was hoped for (Ramström):

(1) The intermediate boards are not the agents of change
(2) These boards lack the necessary instruments of innovation, namely tools of punishment and reward
(3) Anarchy and confusion are characteristic of these boards
(4) Maybe these boards are not oriented towards innovation and change but stability
(5) These boards lack leadership, display little responsibility, and are capable of no efficiency, because the system is so complicated.

According to another analyst (Himmelstrand) the new system of intermediate boards did in fact do a serious and effective job. In any case there are limitations on what can be done at the intermediate level, because the departments are the strong units at the local level. Any attempt to bring about effective coordination at the intermediate level would bring about a negative reaction on the part of the departments. It was generally considered that the activities of the new boards at the intermediate level require close scrutiny in order to find what outcomes the reform will have. If these boards only reflect the strength of the basic units this will have serious implications for the functions to be ascribed to the boards.

In an international perspective the Swedish intermediate boards seem to have less power than corresponding institutions in, for example, the United States (Östergren), which is due to a) the value system, b) the reward system and c) the incentive structure characteristic of the Swedish system of higher education.

According to one analyst (Himmelstrand) the failure of these boards at the intermediate to fulfill the expectations attached to them by the reform reflects a deeper mistake on the part of educational planners and policy-makers, namely the somewhat inflexible adherence to a belief in formal structures. The activities searched for will not be an automatic reflexion of some introduction of formal structures. To create a milieu in which there would be a stimulating interchange of ideas between the schools of higher education and society would require a somewhat different approach than the belief in formal structures. Research into higher education could point at opportunities for creating an innovative climate of interaction between researchers and practitioners. A valid approach to such an analysis is the materialistic analysis of academic work.

D. THE BASIC UNITS

Among the group there was a considerable amount of agreement on the fact that what is vital at the moment is an increased understanding of the way the basic units operate and the way various individuals at the basic units identify their duties and experience their situation. Climate, orientations, identifications, attitudes, values seem to be vital concepts for the growth of knowledge within the field of higher education. Closely connected with the growing interest in the way the basic units and their participants behave is the agreed need for studies of the position of the students in the reformed system. New approaches to the study of the curriculum and the process of knowledge transmission were discussed at length.

In terms of the attitudinal perspective with which the basic unit processes were analyzed it was stated that the decision-making system at the basic level together with the way the intermediate boards operate is dysfunctional for the creation of a stimulating atmosphere for academic work (Ramström). The most important issues, like the climate of work, the situation of the students as well as the general teaching and research atmosphere never become a target for decision-making. The system is characterized by decision-death (Ramström). The concept of decision-death was discussed at length and it may be looked upon as a theoretical concept covering some challenging statements concerning the nature of Swedish schools of higher education:

(1) The decision-making system has an inbuilt bias towards the status quo
(2) The intermediate boards basically block initiatives and innovation
(3) The local governing board is not strong enough to draw up new lines of development as it acts mainly passively by not blocking measures presented for its approval
(4) The new system of division into units reinforces the tendencies towards inertia and the blocking of innova-

0140

tion, because the large units created by the amalgamation are more inflexible and less easily manageable than the previous units.

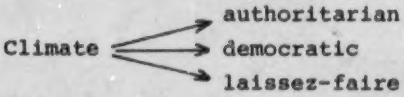
(5) Small units of higher education are more innovative, more movable and have more pioneer spirit. In addition the students are closer to the teachers at small units.

To one analyst the problem of decision-death and the forces that tend to sustain such a state was a research topic of urgent importance, which could be pursued along with a study of departmental climate and student perspective (Becher). The decision-making pattern typical of Swedish schools of higher education was compared with that typical of English universities (Becher).

Questions of bureaucratization were touched upon in connection with the analysis of the decision-making structure. It was suggested that statements as to the level of bureaucratization were often in need of further evidence (Himmelstrand). Both with regard to Swedish higher education as well as with regard to higher education systems abroad the following kind of data is relevant:

(a) Number of students at certain time intervals (decades)
(b) Number of professors at certain time intervals
(c) Number of administrators at certain time intervals
(d) Size of research budgets
(e) Measures of academic productivity

The concept of climate and its quasi-synonyms like atmosphere and valuations was discussed at length. To one analyst there are three main types of HE climate:



Research into Swedish HE climate is an urgent task in order to find out how these various types of climate occur in the system (Himmelstrand). Moreover, a study of HE climate could shed light on:

(1) Intermediate level within the large units: What can we expect from them in a realistic way?
(2) The value structure and the incentive structure at the departmental level
(3) The student climate

E. THE INDIVIDUAL LEVEL: RESEARCHERS, TEACHERS AND STUDENTS

It was suggested that some of the basic problems of HE organizations pertain not to the formal organization but to the conditions which the individuals experience: underpay, inefficiency, lack of motivation, fear of leadership, recruitment problems, fierce competition (Ramström). However, to some members of the group the new system with its large degree of decentralized authority did in fact create a potential for more active behavior at several levels (Ringborg). Maybe the time is not yet ripe for general statements concerning the way the new system might operate, because all the possibilities have not yet been tried. If it should turn out that the new structure did not result in an innovative atmosphere there would, indeed, be a real need for research: Why, now that the system creates a number of possibilities for the creation of a stimulating atmosphere at the local units, does this not in fact happen? (Ringborg).

To one analyst such a research project opened up new possibilities for a different kind of approach to the analysis of the academic structure and academic work (Himmelstrand). What is needed is some kind of production model, i.e. research into the academic mode of production. What might come out of such an analysis is a new definition of the relation between the NBUC and the local units: The NBUC should monitor the academic incompatibilities, and focus on actor crystallization. The NBUC should take steps to create an open meeting kind of milieu, bringing people from various disciplines together on an interdisciplinary schedule and stimulating people to debate about their various models. Research and planning should go hand in hand to create an innovative interacting milieu instead of focussing on the management of HE institutions (Himmelstrand).

It was suggested that steps be taken to describe various kinds of atmosphere at the basic unit level together with more practical steps to help the departments create a more stimulating atmosphere. Any such kind of research and activity would have to take account of the students (Becher). Such research could maybe display some other forces that are conducive to dissatisfaction with higher education. To one analyst it was far from obvious that the formal structure had to take all the blame for the malfunctioning of the HE schools, because maybe the dissatisfaction is a sign of a deeper crisis within the academic world about the purpose and goals of academic work in the welfare state (Ringborg).

Various techniques for getting at the HE climate were discussed, on the one hand survey techniques and on the other action research methods. One method that might prove particularly rewarding is indepth interviews (Becher). By means of these interviews some hypotheses may be tested:

(1) The more distant the social relation between students and staff, the less motivated the students are
(2) The students lack an overview, an exploration of context
(3) Their representatives at various boards do not fully represent them
(4) The more integrated the students are in projects, the more motivated they become.

Whatever methods may be useful it was generally agreed that studies of student climate were urgently needed: What is their life like in the new system? What are the implications of the new structure for their climate? It was suggested (Ringborg) that:

(1) In the new system there will be new types of students, new kinds of enrollments, new kinds of educational demands - all within the traditional departmental structure
(2) Pressures for innovation will be present at the departmental level to meet these new tendencies
(3) New forces within research and teaching will be conducive to rapid mobility in the structure of academic positions.

CONCLUSION

The nature of HE change was the main topic the group considered; in particular, the implications of the recent far-reaching transformation of the Swedish HE institutions were emphasized as well as the new demands on HE research that the reform has created. There was agreements that in the Swedish context it is vital to increase the understanding of decision-making and climate at the local institutions. The focus was on the basic units and the various roles and attitudes of the individuals as well as on the situation of the students. The meaning of decentralized authority within a HE system was emphasized, but it was considered that decentralization is not an end in itself but more of an agenda for moving ahead. In fostering a more innovative and stimulating atmosphere at the basic levels the NBUC could play a vital role in monitoring developments, trying to gather people from different departments to come to some general conclusions. In effect, decentralization points to various missing elements in the reform, which when introduced would result in significant improvements in the day to day activities. To find and analyse these missing elements is the urgent task of the R&D unit within the NBUC.

REPORT FROM DISCUSSION GROUP

GROUP 2 — rapporteur Bert Fredriksson

On the basis of the task of analyzing the theme "Higher education as a system" the group came to deal principally with these five aspects:

a) comparisons between higher education and other social systems
b) the central organizational level within higher education
c) structures for institutions of higher education/ universities and colleges
d) the decision-making structure in higher education
e) the base of knowledge for the planning of higher education.

An important starting point for discussions and analyses of these issues is the outer organizational framework for the education system. In Sweden the National Board of Education (SÖ) is responsible for the compulsory 9-year school, the upper secondary school, the folk high schools, local authority adult education at the comprehensive and the upper secondary level and the study circles entitled to state grants which the adult education associations run. SÖ is also responsible for local authority higher education which principally consists of short study programmes in the health and medical sector, while state-run higher education falls within the National Board of Universities and Colleges' (UHÄ) area of responsibility. Both SÖ and UHÄ are, in turn, subordinate to the Ministry of Education and Cultural Affairs. There at present two ministers in this department; one for schools and one for culture and higher education. Higher agricultural education is provided by the University of Agricultural Sciences which is, in contrast, directly subordinate to the Ministry of Agriculture and thus does not belong to the UHÄ´s area of responsibility. In addition the National Labour Market Board (AMS), the central agency responsible labour market questions, plans labour market training for the unemployed, those in danger of becoming unemployed or those who are difficult to place on the labour market for other reasons. Even graduates are included in labour market training.

The distribution of functions between government departments, central agencies and local boards and other equivalent bodies invites many interesting questions about the outer organization´s importance for educational planning, economizing with limited resources and the conditions for developing goals of higher education and for realizing them. The outer organization for the education system is also of interest in view of the idea of recurrent education which builds on the interaction between education and working life. This will place the planning of voluntary non-compulsory education in a new context and bring the question of the distribution of functions between central agencies and regional and/or local authorities to the fore.

1. Higher education and other sectors of society

Comparative international studies within higher education are certainly interesting and important. But national comparative studies of higher education and other social activities are also important. Comparative studies of higher education and other sectors of society would make greater certainty possible in the prediction of development changes and would enhance the possibility of formulating more general hypotheses which could be applied to higher education. What, for instance, are the similarities and the dissimilarities between higher education on the one side and health and medical care or defence or the mass-media on the other?

What can we learn from experiences of planning in other sectors? Reforms in the higher education sector cannot be seen as isolated factors; on the contrary, they depend on or steer other activities in society. Which are dependent and which independent variables here?

In comparative studies of this kind three aspects come particularly to the fore: a) centralization contra decentralization in the division of functions, b) the bureaucratization of decision-making, and c) the organization and autonomy of the basic levels.

As far as centralization contra decentralization in the division of functions within Swedish higher education is concerned it is interesting to note that the U68 commission´s terms of reference did not presume decentralized decision-making. Instead the idea emerged in the course of their deliberations, probably under the influence of discussions about a decentralization of decision-making in other sectors of society than higher education, even though the universities in our country have defended their autonomy in relation to superior authorities during long periods of time just as those in many other countries have. In these circumstances, however, an important question is what the government expected when it decided on a decentralized organization and what this shift of power from the central to the regional and/or local level means for the achievement of the goals of higher education. Another aspect is what form checks ought to take in order to measure if and how the goals set up are attained with a decentralised division of functions. It is in these perspectives that comparative studies are valuable. Simplyfying somewhat we can say that the main reason for a centralized organization is that it increases the opportunities for co-ordination, for uniformity and for acquiring an overall view, while the most usual reasons for a decentralized decision-making organization are that it leads to better economizing with resources, to increased participation in decisions and to decisions being taken at the level with the greatest knowledge of the activity´s conditions and prerequisites.

With the reform of higher education the cast of Swedish higher education was increased to five groups of actors: representatives of the activity, representatives of the trade unions (both for teachers and for other staff), representatives of society outside higher education both of the public interest and of working life), students and bureaucrats. In the light of this, comparative studies concerning questions of influence by bureaucrats within the area of higher education compared with the influence by bureaucrats from other areas in society, will be interesting. What are the effects of increasing the number of groups of actors in decision-making? What would the consequences for the activities and tasks of higher education be if e.g. the representatives of society outside the universities, the world outside the universities, and of the trade unions were given more influence? What are the relations between the composition of decision-making levels and the conditions of research?

One important issue for higher education is the autonomy of the basic units. Questions this assertion raises are how this autonomy harmonizes with the overall goals for higher education, whether this autonomy is a condition for attaining the goals set up or whether the achievement of these goals is hindered by the autonomous status of the basic units. Another aspect is whether and, if so, how the basic units in higher education differ from the basic units in other sectors of society.

2. The central level within higher education

As has already been mentioned the Swedish higher education reform meant a substantial and important decentralization to the regional and/or the local level of the right to make decisions concerning the distribution of resources for basic higher education.This took place in connection with an alteration of the state higher education system's budget system. It also decentralized the right to decide the number of Program Committees and the number and type of basic units at a university or college to local level. In other words, Sweden went over from a centralized to a decentralized system for the distribution of authoritative values. A prerequisite for this change was that external representatives be accorded places on the higher education system's decision-making bodies. It can be said that Sweden thereby went over from the expert planning of the 1960's to a participatory system with several interested parties in higher education.

At the same time six regional higher education boards were introduced as a new administrative level between the individual universities and colleges and the central agencies. Even if only a short time has passed since the higher education reform was implemented the existence of regional higher education boards gives rise to many interesting questions about the distribution of functions between the higher education sector's different levels.

Before continuing the discussion of the balance between the central and the regional tasks we can make the assumption that the central level must have a balancing function between the regional higher education boards and the individual universities and colleges in respect of planning and value development which is not taken care of naturally at the regional and the local level. Further the development of norms and joint strategies could also be a more ideologically oriented function for the central level together with the task of maintaining regional balance in resources and the arrangement of international contacts on an overall level. Central collective bargaining with the trade unions is another task. Co-ordination of common goals in the activity is yet another task for the central body. On the basis of this we can simplify and say that there are chiefly four models to discuss. One is the present order with individual universities and colleges, regional higher education boards and one central agency (here we disregard the fact that SÖ is responsible for local authority higher education and that agricultural education does not fall within the UHÄ's area of responsibility). Another model assumes only the individual universities and colleges and the regional higher education boards, that is to say there wouldn´t be a central agency. This model can mean either that there are many universities and colleges, as at present or that those in each region are integrated to one regional institute of higher education. Yet another model can abolish the regional level leaving only a central agency and the individual universities and colleges.

A discussion of the importance of the central level within higher education ought to be seen in an overall perspective i.e. alteration should be paid to all levels and on this basis go on to specify how the central level ought to be organized. A reasonable assumption is that the Government Office will probably have to be expanded if we go in for winding up the central agency since certain central tasks are unavoidable. An alternative to this is that a central coordination takes place in such a way that all central agency tasks in non-compulsory education are concentrated in one agency or that at least state and local authority higher education are coordinated in one central agency, an issue which is, by the way, the object of a special commission of inquiry at present. It is also conceivable that UHÄ´s present duties are widened to include responsibility for the planning of all research, that is the agency would also be responsible for all sectoral research and for the duties of the three research councils and their co-ordinating research board. In this way uniform research planning at central agency level would be made possible. Another model is to organise the central level on the basis of the functions of higher education: teaching and research.

3. Structures within universities and colleges

The concept of higher education was widened through the reform of higher education and Sweden now has institutions of higher education which only offer basic higher education as well as institutions whose duties include both basic education and research and training for research. All higher education has to promote and develop a link between research and teaching.

An interesting issue in these circumstances is how the valuation of research and education will develop and how the link with research, which the whole reform of higher education rests on and presupposes, can be developed. Institutions of higher education have different possibilities for development; we can imagine that the smaller institutions concerned only with teaching are apt to want to develop research activities of their own; this must in turn be balanced against demands for unified resources for research and training for research, that is further spreading of this activity beyond the present six universities is not justified. We can even expect that tensions will arise between the large universities on the one side and the smaller institutions and the regional higher education boards on the other. But a grouping of units according to a poly-dimensional value system is also conceivable. According to the view a university (institutions of higher education) is organized with research as one dimension of knowledge, practical knowledge development as another, artistic knowledge development as a third.

Another aspect is the conditions on which the basic units contribute to the growth of knowledge and convey existing knowledge. Central issues here are the basis on which the basic units are classified and their autonomy in relation to other local higher education bodies, perhaps principally Program Committees and Faculty Boards. The distribution of functions and responsibility within the basic units is another important issue.

It is also a question of safeguarding an interplay across the basic unit boundaries and developing the conditions for a link between research and teaching via the organization of the institutions' basic units. An important precondition for achieving this link is the nature of the teachers' duties; at present these are strictly divided into teaching and research.

4. The decision-making structure

Decision-making in higher education must of course take place within the general rules which apply in public administration. It is however, also important that decision-making serves the higher education sector's primary goals and activity. The importance of a consensus on the means and goals of the activity ought to be emphasized in this connection. It ought to be especially underlined that a good balance between research and teaching must be sought as these two activities ara dependent on one another. It is also important that forms for decision-making are found which make it easier for teachers to devote themselves to their main tasks, teaching and research. In other words a a careful analysis must be made of what general bureaucratic rules are necessary in higher education and of what rules can be disregarded in view of the higher education sector's knowledge-creating and knowledge-transmitting role and function.

5. The base of knowledge for planning

It is important to increase knowledge about the role of higher education in society and to strive after effective planning models and a greater qualitative ability to predict conceivable changes in society with repercussions for higher education. In view of the complexity of scientific and scholarly research attempts to improve communication between theoreticians and practitioners and to develop a common terminology are also important. Doubts can be expressed about the role large government commissions will play in the future. They can have another task if greater emphasis is placed on smaller, gradual reforms; what is known as rolling planning within existing bodies. It is then important to keep sight of the visions of what society ought to be and to try to create coherent, more systematic analyses of the problems of the future. The bridge between theoreticians and practitioners which many want to protect can be constructed by, for instance, an alteration between the administrative and the research function.

In addition an excessive tendency to reach compromises can often be discerned in the work of government commissions, with the result that their proposals turn out to be watered down, undistinguished and perhaps insufficiently well-analysed. A clearer account of alternative solutions can therefore be an advantage on many occasions.

III ROLE OF HIGHER EDUCATION IN SOCIETY

HIGHER EDUCATION AND SOCIETY, An analysis of the relationships from a structural and a historical point of view.

by Yrjo-Paavo Häyrynen

1. Introduction: what is essential in the relationships between the university and the society at large

The present paper attempts to identify certain problems of higher education which appear to remain unsolved as yet. The theme ´higher education and society´ has been introduced by the National Board of Universities and Colleges as one of the main themes of the Swedish research on higher education. In writing this from a socio-political point of view I wanted to stress the following aspects of approach:

- the historical or "genetic" aspect, which is offered as an alternative to straightforward, linear planning;
- the qualitative and holistic aspect, which starts from the view that university institutions are elements of society and thus reflect its basic qualities (economic order, tradition, social structure) and its totality;
- the complex, dialectic relationship between the internal quality of higher education and the external pressures upon it.

Einstein has said that our theory decides what we observe. The above-mentioned aspects define no theory, but they may be considered as rules of observation. A ´good´ model for higher education can be characterized by the properties listed below:

- the model should reflect social reality,
- it should be comprehensive, in order to cover complex social relationships,

- it should identify problems, i.e., the underlying tensions in the interaction between university and outside world that cause new demands on higher education,
- it should take into account the qualitative nature of changes, instead of mere quantitative trends,
- it should open the way for intersystem comparisons.

I can mention here that a comprehensive Marxist criticism of the Swedish system of higher education has been introduced by a German teacher, Ludvig Fischer (1974). In some ways my approach combines features of the materialist perspective (economic relations are considered as main forces influencing politics) and of the systems approach. I do not want to speak of ´university´ and ´society´ as two independent partners having their own interests. University men may represent a typical way of behaving in different social situations, but despite these curiosities, they portray the interests of different social classes or groups. On the other hand, we cannot speak of society as a collective decision-maker (cf. also Fischer´s criticism of Swedish educational planning). A society is composed of divergent social forces, activities of individuals, groups, strata and classes. Changes in the economic base create new conditions to which the system of higher education should be adjusted. Nowadays it is evident that different groups and classes make different demands on education.

This aspect is partly stressed by Scandinavian researchers R. Th. Enerstvedt and B. Abrahamsson when they speak of "science as pedagogics". Some social circles may demand for military research, others business research, some qualified and loyal managers for their use, while still others are concerned with educating the still-uneducated classes or with research on working-conditions. These pressures can be expressed as political demands; they are also fed into the university as informal pressures, through newspaper discussion, through social needs exposed by every-day life. Administrative decisions and procedures cannot, in fact, bring about scientific creativeness.

Universities - scientific disciplines - should reflect these outside demands in their methods and theoretical dispositions, not in their administrative procedures and attitudes. This separates them strictly from organizations like governmental boards, committees, etc. This also constitutes one of the fundamental problems of the social guiding of science, i.e., of the policy of science. Actually we can speak of two different, but parallel ways in which universities are connected to their outside system. First, they interact as a community with other social groups, trying to meet certain demands which form the basis of their popularity and of their material resources (this refers, e.g., to the political ties between university administration and some social classes). On the other hand, universities use logical, scientific methods (scientific creativeness) when formulating the problems of society. I think that all scientific problems are basically social. Nowadays the range of activities where scientific method is necessary is increasing continuously. This has made higher education a crucial political and economic function of each society.

2. Certain problems of higher education at the European level in the 70s

How do different societies actually adjust their educational and research institutions to changing economic and technological conditions? The present constellation of science, technology, education and productivity puts heavy demands on planning-systems in all societies be they capitalist or socialist. In the planned economies academies and universities may be traditional in many respects, but they take part in the long-term social planning. Therefore it is useful to study the kind of concepts they use in their social planning. Gvishiani, the Soviet expert on systems theory and science policy has introduced the concept "active-level forecasting". This includes the idea that forecasting does not just follow certain linear trends, but also suggests active solutions to socially important problems. Therefore science forecasting is more than predicting of the future amount of scientists - it is concerned with the organization and quality of the future system of research.

Nowadays the Soviet leaders (e.g. Breznev) stress the role of fundamental research in addition to the direct application of the sciences. This is because economic development today is not so much affected by a continuous flow of particular research findings as by the generation of new theories, which often lead to the establishment of totally new fields of production (cf. the nuclear industry, information technology, etc.). This need for comprehensive theories in the area of social sciences and the humanities has also been recognized recently by many Western speakers on science policy. President Urho Kekkonen expressed in his Uppsala speech in 1977 the wish that the social sciences would work more open-mindedly to develop new and comprehensive theoretical views which would deal with important social problems. Nowadays the planning of production requires the integration of social, psychological and technological aspects. It may be predicted that the construction of intellectual syntheses will become the chief target of higher institutions.

It is interesting to see that Western experts on higher education usually perceive the present development as relatively spontaneous; changes seem to emerge without any particular logic. Often some particular features of development are interpreted as independent causes of the development. For example, in many images of society (the theory of "post-industrial" society or of "knowledge" as the primary axis around which social development is constructed), the increasing amount of knowledge and research is interpreted as the causes of new types of stratification and social management (as by Daniel Bell). These explanations may underestimate the rôle classrelationships and the economic order play in the shaping of new types of stratification. On the other hand, they overestimate the rôle of the "intellectual elite" as the primary social force. As regards the social functions of science, social scientists of East-European systems appear to emphasize the scientific and technological revolution as a new condition of development (although not an independent force), in which higher education plays a new significant rôle (cf. "Man, science, technology", 1973).

Universities are an important instrument in this revolutionary change since they produce the ideas and methods which make automation, new forces of production and a new organization of economy possible. In addition to this, they also should educate persons who can direct the technical development towards meaningful social goals, by teaching, informing and interacting with people and through their understanding of aesthetic and moral values. This puts heavy demands on the personality goals of education. These goals are apparently stressed more in socialist education, since the general prospect of social change is tied to emergence of "a new type of man". This development - if it has been described correctly - is interesting since the personality-goal was one of the main targets of education in the earlier bourgeois university (the culture-university). Fischer (1974) maintains that it is no longer important in the West because those who receive mass-higher education come from lower social strata and do not form the core of the ruling classes.

Many of the socialist countries are nowadays approaching the level of mature industrialism, the stage of "developed socialism". The highly developed Western states have already reached the mature state of technology; this has put several new demands on their occupational structure and planning. I think that two special problems emerge at this phase: introduction of new patterns of educational motivation, and the need to plan the total system of education and employment. To clarify these problems it is useful to compare how they are illustrated in the educational policy of some socialist states. In Poland the principal tasks of higher education in the 50s were to assist national recovery, to build a new type of intelligentsia and to increase social mobility so that new parts of the population could enter secondary and higher education (cf. the comparative study by Adamski & Häyrynen, 1978). In this era the social ambitions of the lower strata contributed to the acceleration of social mobility which has shifted the composition of educated classes in the direction of the prescribed social goals. At the stage of developed socialism, and with introduction of comprehensive secondary education, the new socio-political goal which has been declared in Poland is the separation of the individual's level of education from his position in the social hierarchy. This means not only that one can be educated and still perform physical work, but also that the education achieved may not offer special economic or status rewards. It has now been realized that to make this new goal-setting possible, a total re-shaping of motivational structures is required. The educated classes may be over-represented in higher studies because they have a strong interest in education as a value in itself (the autotelic motivation) while the children of working-class parents are more interested in gaining the vocational training they need. It may be asked whether this problem of the changing motivational basis for education will also emerge, e.g., in the Swedish system of universities and colleges in one form or another.

In many countries educational growth has preceded changes in the structure of occupations. One of the more substantial problems concerning higher education which will be discussed is, then, the question of 'over-education', or of the influence of educational growth on the job-structure. This problem often emerges in the socialist states which have consciously used educational expansion as one of the main factors of social change. It has been claimed that too high a level of education may shape the youth's structure of occupational choices in a wrong way. On the other hand, educational expansion forms the most important source for the leap into the era of mature technology.

One of the more interesting schemes to solve this problem has baen introduced by the Soviet sociologist Zdravomyslov & al. (1969). They recommend a bolder re-arrangement of occupational functions and a broad educational basis which would allow individuals to re-arrange their personal skills. Continuously this might lead to a more flexible combination of the mental and physical functions of work. They criticize the Western type of education because it makes a sharp division between these functions (the theory of "polytechnical education" in the socialist countries aims at a harmonious integration of these basic functions of work).

What would be important to analyze further is whether a capitalist society is able to plan its occupational structure so that the nature of work will in general be intellectually higher. The problem of ´overeducation´ has yet only been structured in very narrow terms, like by Ivar Berg (1973) who mainly warns against exaggerating the value of education and against educating people who might possess ´too high expectations´ regarding the future. In Finland at least this new kind of ´antieducational´ attitude has won ground in the 70s, when the general economic crisis has postponed many educational reforms and led to unemployment even among the educated classes. Restriction of the volume of education may, however, lead to a new kind of crisis, since it hinders the realization of the new patterns of technology in our country (Ginzberg speaks of the neglecting of the "opportunity costs for creativity" in this narrow kind of definition of the relation between education and jobs).

3. Linear planning vs. social prognostics

Changes in the social functions of higher education are accompanied by alterations both in its quantitative and qualitative scope. The quantitative expansion of education has not been mastered in the educational planning of most Western states; in the 70s it has led to attempts to find new forms of higher education and to discuss these forms at the international level too. Some problems seem to be universal at certain phases of development irrespective of the particular social order of a country. Increasing the level of abstract knowledge in higher education is apt to isolate a part of the youth in all countries from the practical aspects of social life.

This problem is tackled in different ways by different social systems: in the socialist countries through polytechnical education, in the Western countries through project-organized teaching and studies. Educational contents in many Western countries in the 70s are relatively tightly standardized, which goes hand in hand with the increasing stagnation of qualitative educational development. This stagnation may be coupled with the goalcrisis of higher education which is evident in market-economies. To solve this crisis many states have applied different ways of defining the quantitative norms of the development of their educational systems. This has led to a kind of linear, quantitative planning that dominates the questions of quality.

P. Dalin says in one UNESCO journal that Western educational planning is mostly based on the assumption that "this trend will be continued". This is a very descriptive picture of the logic of linear planning. The linear model for planning is mainly reactive: it adjusts education to outside demands, but does not anticipate the deep changes in social structures and technology which are unavoidable. In one of our papers we have claimed, e.g., that in Sweden the quantitative predictions of higher education do not actually anticipate the run of scientific and technological development, but only follow the already observable trends (Häyrynen & Perho, 1974). Although a new reaction towards the conditions of higher education was formed in the 50s in Sweden - clearly earlier than in Finland - Ludvig Fischer (op.cit.) maintains that it was after the objective conditions of capitalist accumulation had already changed. Often this kind of corrective planning becomes necessary when the spontaneous educational expansion has demonstrated a general growth of educational interests. This has been the picture of development in Finland.

The actual method of planning in most Western states - on the basis of the survey made by UNESCO for the second conference of European ministers of higher education in 1973 - has been the flow-and-demand model, which tries to adjust the intake of students to the anticipated demands for labour. Because of the fluctuation of the labour market this type of balance is not easily achieved. What is problematic is that this type of model does not take into account the qualitative changes in the structure of qualifications - not only the relative proportions of different jobs, but also the conditions of work and ability in each job are changing. Productivity is more and more based on the increasing utilization of man's mental abilities (cf. Häyrynen, 1977; the model for intensive utilization of production-resources). This requires a deep consideration of qualitative factors of change which is not possible with flow-and-demand, input-output, or production-function models.

In practice the adjustment of such historical processes as intellectual creativeness and education to quantitative demands disturbs the internal quality of higher education: it usually favours a regulated, stream-lined, or modular type of curriculum. Fischer claims that it turns attention to quantitative relations instead of to the problems of disciplines and scholarly education. My opinion is that a historical and qualitative approach, which attempts to identify the determinative parameters of social changes and the objective conditions of development, would lead to a totally different model for planning. Bauer & Eichorn (1969) have introduced the materialist concept of social prognosis which refers to the theory of predicting social activities of groups, classes and nations. The model is deterministic in that it interprets each outcome of development as a function of a general law (objective conditions) and of the specific historical situation.

A third factor is the conscious political decision which is based on the understanding of the general law and the national situation. In this way it allows active influence on outcomes. Another feature of the social prognostics model is that it stresses indirect shaping of outcomes, e.g., shaping of new social structures, motives, modes of interaction, way of life, which would, then result in the intended quantitative or economic outcomes. Applied to the planning of higher education it would emphasize a complete reshaping of basic educational and research institutions, which should also be able to apply the scientific method and theory in orienting their own activities.

Basic institutes would in this case have the capacity for autonomous planning; this requires that they interpret the social problems emerging continuously in the outside world effectively. In Finland the democratic proposal for the reform of academic curricula in the early 70s started from this kind of emphasis on the quality of institutes rather than on external norms of the "study programmes", although this was not fully understood in the discussion which followed. To clarify the idea of the socio-structural planning of higher education we must learn more about how science actually affects social development; the next section formulates some systems chains which illustrate these directions of influence.

4. The special way in which science effects social development

In studying the relationships between higher education and social development we can isolate the sub-system SCIENCE → TECHNOLOGY → PRODUCTION, which transforms scientific creativity into technological ideas and incorporates them in the system of production. This art of systems approach was applied in the work "Man-Science-Technology" (1973). The laws which govern the use of scientific ideas in the realm of production are not technological but economic. When science becomes an immediate ˝force of production˝, this leads to the fastening of the link economy - science. The controversies of the system of production are thus reflected back into the realm of science and knowledge. This is a significant sociological question since it may explain, as a young Finnish sociologist has noted, many of the internal controversies of the present system of education and research (motivational unpredictability, moral conflicts, feelings of powerlessness).

However, scientific ideas do not only affect the world as technical applications but also through education which reproduces new abilities in the masses of people. The process of research builds the image of the world and is reflected more and more in the contents of compulsory teaching. We may formulate a subsystem SCIENCE → EDUCATION → CULTURE, which corresponds to the neo-classical idea of the university. This is the original idea of scholarship. Later it was assimilated with the subsystem science-technology: it may be borne in mind that technology, production, economy, and culture form a totality, determined through the form of society.

The principal task of science is the theoretical monitoring of the world. The objects of reality are observed through categories, concepts, and scientific laws which arrange our information. This is the way in which science is applied in a particular profession, in psychology, research, teaching, medicine, even in administration.

The classical paradigm of education was according to the Finnish Hegelian philosopher J.W. Snellman the process of learning in which the subject is conscious and aware. To awake the consciousness would, then, be the first task of university education. I will not express my ideas about the psychology of education here, but I think that the reasoning of Ference Marton and his Gothenburg group starts from rather similar premises, although they do not place so much stress on the role personality plays. Nowadays the Snellmanian point of view is emphasized in Finland by several university teachers: The task of university education is to initiate the process of methodological monitoring of the world in the student. The methodological function of science determines the content of scientific creativity.

Professor Juha Manninen from the University of Oulu (Uleåborg) has recently claimed that administrative manipulation of the university collective and the ideological control of higher learning have always resulted in the degeneration of both technological and cultural scientific creativeness. Some other Finnish philosophers have attached importance to the concept of knowledge which guides the planning of degrees and curricula. I admit that these points of view were not stressed sufficiently in the reform-proposal of the committee I chaired in 1972 (FYTT); our focus was on the internal democratization of university and on the polytechnical connection of science and practice.

In Kant´s words there are two conceptions of knowledge. One is the rhapsodic conception in which knowledge is considered as information which can be taken into pieces and then used in practical problem-solving (ref. on the basis of a lecture of Dr. Juntunen). Another is the architectural conception, according to which one should master the systematic body of knowledge in order to be able to take reasonable practical and moral decisions on the important problems in life. It seems that these two conceptions also lead to separate images of professional work and social qualifications. A large stratum of occupations appears to be based only on a fragmentary body of knowledge. This easily leads to an incapacity to form any perspective.

5. University: institution; organization; political environment?

There are three chief emphases in the sociology of higher education: universities as goal-directed politico-economic functions of society; universities as controllable organizations; universities as cultural institutions with their own developmental laws. The socio-economic approach is principally represented by certain Marxist researchers (Fischer´s criticism of the Swedish university reform is its detailed example). There is a productive political science research group at the University of Stockholm, which has applied the organizational system approach and connected it with the analysis of the rôle of the state in mature capitalism and with the systematization of predictive approaches (Lindensjö, 1977; Wittrock, 1978).

The cultural approach is represented by those who stress the autonomous and creative function of science - in Sweden Torgny Segerstedt, Bengt Abrahamsson (1977), and many others. As Lindensjö (1977) has shown, the organizational paradigm is common in the present policy for higher education - it is also followed in the dynamic case studies of Berg and Östergren (1977), which move at the level of particular institutions. It is interesting to note how the latter use Kurt Lewin's field-theory in their studies; however, this theory may not be workable at the macro-level of society, since it chiefly deals with attitudinal variables of change.

Each paradigm emphasizes different aspects of the same phenomenon. When Urban Dahllöf (1977) in his work on the present Swedish (and Australian) reforms states that the main polarization in the Swedish debate has been between the government and some prominent spokesmen of university autonomy, this observation is certainly true. In Finland we find different types of polarities: between the "Foundation of Higher Education and Science" representing a coalition of banks, economy and university chancellors and the leftist or liberalistic circles in the university; between the government and some scholars and some parts of the student movement opposed to the administrative manipulation of universities; between the Ministry of Education and the inviolable self-government of the University of Helsinki.

All these polarities appear to reflect a higher political tension than in Sweden and have led to an inflamed university atmosphere in our country and to an arrest of most reforms. We can, however, interpret the Swedish polarity in many different ways. It may manifest certain controversies in the total change Sweden is facing; a Marxist writer might say that it is a conflict in which the university institution represents a traditional type of bourgeoisie and the government, a 'collective capitalist' which has to break the old privileges (Fischer). Amitai Etzioni might see here a conflict between two types of expanding institutions, and Talcott Parsons, a conflict between the vertical bureaucratic pattern and the horizontal type of cultural sub-system (university).

Each of the methodological approaches has its shortcomings. The economic approach may lead to economic parallelism and to underestimating the significance of cultural processes like tradition and the initiation of new interests. The policy science approach may confine itself to formal and detailed observations and suffer, thus, from an exaggerated empirism. The cultural approach may isolate the university from its social base, and in this way even defend the internal hierarchy of the conservative university model. Bengt Abrahamsson's study is most interesting as regards different types of university interpretations. On the other hand, it omits the practical implications of research, its finances, external control, social basis and use by different social circles.

Baldridge (1971) has given a list of university models which comes close to my polarity "institution-organization" but adds to it the political paradigm: universities as communities, as organizations, and as political environments. I think that universities as communities are organizationally universally ineffective. As Parsons says they consider themselves as long-term institutions, whose task is to transform cultural traditions creatively; they cannot offer a direct output which can be judged externally. Also Dick Ramström (1973) has expressed the opinion that although the traditional university organization is ineffective and uncertain in goals, it cannot be improved by strengthening the bureaucratic (Parsons: vertical) administration. Apparently increased decentralization and democratization only would open the space for the expected creativity.

We know of several eras when universities have been seats of new progressive ideas. They have offered a place for unconventionality, which is necessary for the anticipation of inprobable problem-dispositions. This leads not only to their organizational irritability and slowness, but also to their politically unpredictable nature from the point of view of rulers, particularly if the rulers do not represent the interests of the large strata of society. On the other hand, universities reproduce ideas which serve the survival of the system. If they are controlled too heavily they may be inefficient in their principal function.

Historically we can distinguish between two basic types of control from the ruling classes: a soft and liberal strategy, which is apt to tolerate the flow of new ideas and to use them in a beneficial re-organization of the social structures, and a hard strategy, which attempts to maintain the rigid social structures and to control the flow of unacceptable social ideas (P. Lazarsfeld). It may be noted that in 1977 a Finnish University was attacked by a member of government on the grounds that it had been a ´nest for radical elements´. This case is reviewed in my article (NFPF-information 3/1977). This case and many other cases indicate that there are strong desires to control the flow of scientific ideas politically. Despite these trends I like to maintain that the scientific method in itself is not political - it is an expression of a logic of facts and thinking, developed on the ground of general social experience.

Science is political so far as truth is political. In the interaction between the university and the outside world there is a very complicated relationship between science, teaching, and professional practice. Here I like to refer to the ´magic triangle´ introduced by professor Edmund Dahlström in a conference arranged by the National Board of Universities and Colleges in Sweden (the triadic scheme of research, education, and professional practice).

6. From classical to technocratic and mass university

The concept of the university as a seat for autonomous reflection on the world was created by the advancing bourgeoisie. The neo-classical type of university was aimed at the reproduction of the upper stratum of the bourgeoisie, but it also reflected the patriotic and emancipatory interests of the advancing social groups. It is no accident that W. von Humboldt, the founder of Berlin University, also suggested general compulsory education for all (this was implemented in Prussia as early as 1809). The educational struggle was then a part of the general struggle for an independent and unified Germany. The liberal emancipatory university was attacked already in the 1840s and, again, in the reactionary 1930s, and many of its founders were persecuted as a risk for the ruling classes.

The new professional-technological university, die Hochschule, was a response to the growing capitalist economy. It also developed a new scientific paradigm, the applied sciences, which formed a link between theory and technology. It should be observed that the professional school preserved many features of the neo-classical university; it disrupted, however, the philosophical unity of disciplines, and its main ideology was professionalism. It adopted the form of the old academic model (the faculties or schools of medicine, technology, applied sciences) but was separated from the humanities. The professional university was socially selective; in Sweden about 90 % of those with an academic degree in 1900 were sons of academic families.

The new model of expanded accumulation included generation of new academic cadres which are closer to the lower middle strata than to the upper class. This development and the quantitative expansion of the university culminated in the 1950s in the crisis of the old academic model. We can speak of a mass university, which seems to be a result of an expanded inflow of students. The mass university is chiefly concerned with the production of qualifications, not with the preparation of an education class. Adam Smith already argued that in a market society philosophy, knowledge, religion should be offered for sale like shoes and stockings, and the mass university with its consumer-orientation (educational moduls, courses etc., as commodities) responds to these demands. The mass university also reflects the crisis which was due to the inadequate anticipation of the new conditions of reproduction.

The rapid expansion of the tertiary sector - in Sweden and in the USA over 50 % of the labour force is now performing some kind of mental labour - led to an increased demand for academic qualifications, but also to a decrease in the value of mental and academic labour. The ´student revolution´ in the 60s was largely the reaction of the middle stratum to its worsened conditions of life. This protest led to certain unrealistic tendencies (total negation of society by the frustrated petty-bourgeoisie), but also to the model of a critical university. This model has not been concretized in any institutionalized colleges: nowadays it continues living in different parts of the student movement and perhaps in certain empty goal-statements in our official documents (empty because the programme for teaching and the shortage of resources hardly allows sufficient scope for critical thinking; Fischer).

In many countries the expansion of public expenditure on higher education led to demands for rationalization, which meant a reduction in the relative costs per student. Some Marxist writers have claimed that this is due to the fact that nowadays new social strata are utilizing the university, and the quality of their education is no longer in the interest of the upper classes. Rationalization and external regulation have led to a new type of ´technocratic´ university, in which the external demands of reproduction attempt to affect the internal shape of the university directly.

The increasing complexity of work is generating a need for higher educational qualifications among large strata or people. Teachers, engineers, researchers, technicians, skilled workers, nurses and officials implement the scientific and technological revolution in the society. Shortcomings in education cause an extra stress - increased tempo, uncertainty, etc. In the Finnish proposal for reform of university degrees and curricula (the ´FYTT-report´) we introduced a concept of science which in many respects comes close to what B. Abrahamsson and R. Th. Enerstvedt have described as ´science as pedagogics´. In our *polytechnical model* we emphasized the unity of research, education, professional practice and science as policy. Our polytechnical paradigm had several weaknesses but I still think that it was a *pedagogically-oriented proposal* which was more concerned with the inner quality of universities than the later administratively-oriented university reform.

We can present the four central university paradigms in a matrix as follows (this representation has been modified by Mr. Esko Vesikansa on the basis of our initial classification of different types of reform):

		EMPHASIS ON INTERNAL QUALITY OR CREATIVITY:	
		Low	High
CONNECTION WITH EXTERNAL DEMANDS OR REACTION TO ENVIRONMENT	Strong	**Technocratic**: educational-technological; producing qualifications; organizationally regulated	**Polytechnical-democratic**: project-centred; decentralized administration; autonomy; unity of research, teaching, practice and policy formation; problem-oriented studies
	Weak	**Mass university**: goal anomie; uncertainty of motives; low standard of results	**Neo-classical**: old academic model; culture-university; critical; negation of social pressures; high selectivity; discipline-oriented studies

It is important to study how these different models for the university affect student motivation and the nature of career choice. They represent entirely different climates of teaching and research. Our empirical studies of university climates (on the basis of student perceptions) generally show that technocratic and polytechnical types of departments (their assessment against the theoretical models is of course always relative) are usually experienced as being goal-centred (cf. Y.-P.H., H. Perho, 1976). Changes in the model of education may affect the certainty of career choice unexpectedly. The degree of study motivation may be generally decreasing in the present Finnish university milieu, in which the study programmes are mechanically regulated.

Although the four paradigms which are introduced above are stereotypes, they offer a tool for the analysis of different lines of reform. We cannot consider the mass university in itself as democratic, although it means an expanded intake of students into higher institutions. Because of the decreased standard and prestige, it is more a question of turning universities into a kind of vocational institute or supplier of semi-academic courses. In the present situation many intellectual circles have striven back to the idealist neo-classical model. My opinion is, however, that we cannot deny the connection between science and practice. The polytechnical university (which, thus, does not refer to ´technical´ education) is a realistic goal in the conditions in which the university is seen as a democratizing factor. It should in this case avoid becoming a non-intellectual professional school.

The square-field makes it possible to postulate several directions of reform or spontaneous development: from the classical to the mass university (in the 50s), from mass university to the technocratic model (the usual line in the 60s and 70s), from the classical or mass university to the polytechnic and democratic one (a favourable goal of the democratic movement).

7. Conclusions: certain outsider observations on the Swedish system and points of uncertainty in our systems of higher education planning

Denison (1962) predicted in the beginning of the 1960s that the importance of education would grow towards the 1980s. Soviet researchers have evaluated that about 30 % of the increase of productivity of the U.S.S.R. in the 1960s is attributable to increased skills. On the other hand, Denison stressed that the economically positive influence of educational growth would disappear if the quality of education decreases. This statement should be taken seriously. No solution which decreases the relative quality of education will be valid in the present era when production and productivity depend more and more on mental abilities. It may be predicted that in mature capitalist economies the decrease in the internal quality of education in relation to the new external demands is going to be the core of the problems.

In his interesting work "The Future of Development" P. Heintz

(1973), the Swiss economist, has tried to build a model for a world system of development on the basis of the observed interconnections between certain parameters of growth. These parameters are the level of education, the level of urbanization, the level of incomes, and the level of industrial differentiation (the extent of the tertiary sector). The general scheme is that education contributes to the growth of incomes. In countries with a high level of incomes the effect of education on economic growth appears to vanish (particularly in the USA and Sweden). In these countries the level of tertiarization, the service sector, appears to accelerate economic growth and thus be the crucial factor of it. As we know, Sweden has gone through a rather sharp shift towards a tertiary structure since the 1950s; its direction of change has been rather close to that of the Netherlands (the rate of urbanization and the rate of the declination of agriculture are now decreasing due to "saturation" in these respects).

The tertiary sector becomes a generator of ideas needed in a highly developed industrial system; in capitalist countries it also represents the growing R&D sector of the multinational enterprises. According to Heintz, highly developed industrial nations cannot utilize the growth of education further if they do not radically revise their organization of work and their social division of labour. This can be done, not by adjusting education to the existing ´occupational roles´, but by democratizing education (the common social memory) and through affecting the structure of occupations and organizations in this way. I like to point out certain similarities between Heintz and Zdravomyslov & al. (1969), although the conclusion is based on different premises. This aspect would totally change the basis of educational planning.

Despite Berg´s (1973) claims, we cannot speak of over-education during an era of deep qualitative changes. The problem is the discrepancy between the de facto development and the possibilities. Heintz speaks of three different alternatives which may be politically interesting. The countries in a situation of ´over-education´ may apply repressive measures and restrict the growth of education, which will also lead to a hardened cultural atmosphere. Or they may attempt to change their occupational and political structures in order to utilize the creative resources of their populations, and promote thus, the democratic change. A third alternative is to accept the position of a ´satellite´ and follow the technological lead of multinational enterprises. According to Heintz there exists an increasing trend in the world system towards equalization of education - it will apparently be levelled out earlier than other international or intranational differences. I think that this trend (in Finland, for example, the self-accelerating effect of educational growth may press for the equalization of pre-university education in the 1980s) is causing a new political tension which is also manifested in ´anti-educational´ attitudes.

According to the calculations of Heintz, Sweden - like Finland - has not utilized the possibilities for educational growth to the degree which its other factors of development would have permitted. It can be assumed that the growth of incomes, urbanization, and increase in the service sector would have demanded a more rapid tempo of educational development. In Sweden the process of tertiarization has been accelerating economic growth, but this potential may soon be exhausted if the division of labour is not revised. It may be that the large army of immigrant manpower, usually placed at relatively simple jobs, has delayed the improvement of the quality of basic processes of work.

The present economic crisis has led to tendencies in all capitalist countries to reduce the growth of educational costs, which disturbs the total accumulation of social ability. There are difficulties in influencing politically the development of occupational structures and technology in market economic countries with a high degree of capital concentration like Sweden (tha decisions on labour division and on technology are made by private economic actors). Another unsolved problem is the discrepancy between the linear system of planning and the dialectic nature of the socio-historical processes through which ability and scientific ideas are created. This discrepancy is often experienced as difficulties of regulation.

Certain statistical data seem to indicate that the basis of students' self-selection might change in rather unexpected ways in the new system of higher education. In Sweden, if I have interpreted the tables presented by Dahllöf (1977) correctly, it seems that it has been difficult to control the distribution of students between the technological fields of study and the humanities as well as the distribution of males and females in different fields of study (the overproportion of the humanities students and the disproportion of the sexes in certain fields of study is rather similar in Finland). In secondary education the favoured position of theoretical subjects seems to be disappearing, a trend which may be in conflict with the universal demand for increased theoretical qualification in an era of scientific and technological revolution. It also seems that the number of students who are not aiming at a full academic degree is rather high.

This may indicate that the new system is becoming a kind of adult education institute recruiting a part of its students from among adults with insufficient general qualifications. It may be predicted that socio-cultural processes like career choice, motivation, and processes of learning are those which cannot be programmed according to certain economic goals without a general improvement in the degree of culture and the way of life. Educational policy in a narrow sense is thus not enough. In market economies like Finland and Sweden the general flexibility of workers must be high because of the low predictability of occupational changes and employment. This attaches importance to broad general and on-the-job qualifications. I think that in the long run the systematic 'architectural' basis of knowledge serves all democratic aims since it orientates people to their problems and makes their decisions regarding life-career, politics, consumption, and work more rational and conscious. In this sense the social significance of higher education will depend on the quality of its inner life and of the preceding general education.

Finally we might identify certain fragmentary topics which it seems to be particularly important to investigate (regarding the relationships between the university and the outside systems). I like to structure these themes as follows.

1. Occupational structure and factors determining the division and quality of labour in our societies
2. Economic macro-climate, its impact on the strategy of planning (the influence of the existing crisis), on the flow of career choices, on the internal atmosphere of universities
3. Methods of assessing the internal quality of education, the significance of tradition, new pedagogic models, student motivation and personality
4. Institutional shape of university and its sub-systems, the "organization - community" or "centralization-democratization" polarity in shaping of the internal administration of university
5. Theoretical architecture of the project-research oriented to the problems of higher education (how this versatile research can follow different traditions and build comprehensive theories instead of particularistic reports)
6. The praxis-connections of the university and its different informal ties to social and political practice
7. Connections of higher education (the science system) with the secondary form of education and the actual and possible modes of this interaction in the area of recruitment and of curricular planning.

These are also the topics which I believe have been most neglected in the present discussion. In view of the great concern with systemic models I finally would like to suggest that one may, if one wants to, form a 7 by 7 matrix of these theoretical themes and analyze the dyadic interconnection of each pair of research themes in this morphology.

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ELITE AND MASS HIGHER EDUCATION: AMERICAN MODELS AND EUROPEAN REALITIES

by Martin Trow

Introduction

For most of the Western world, the watershed between the "old" university and the "new" was 1968. It is just a decade after those great events, perhaps an appropriate time to take stock, to see where we are in higher education in western industrial societies, and much more hesitantly and even diffidently, to consider some of the problems ahead.

There are two large sets of difficulties which all of us concerned with higher education must experience every time we try to speak of it beyond a very particular manifestation in a specific university, department or course. One of these has to do with the diversity and complexity of higher educational systems today. The other has to do with the extraordinary uncertainties that mark their development. On one hand, we are speaking of systems which differ enormously from the small traditional elite systems of the pre-war years. We are talking rather of hundreds of universities, thousands of academic departments or their equivalents. All of these institutions vary among themselves in their conditions of teaching, learning and research-conditions shaped by:

a. The intellectual resources of varying disciplines and fields of study;

b. The quite variable job opportunities for graduates in different subjects and in different countries;

c. The social recruitment of students to different fields and universities;

d. The enormously different traditions, laws and regulations governing the internal management and operation of universities and other institutions of higher education;

e. The quite sharply varying patterns govering the formal and informal relations of higher education to state authorities in different countries; and

f. Broad differences and trends in the political cultures of our several societies.

These are merely a few of the many forces that shape the characteristics and experiences of our institutions. 2) Nevertheless, all these forces and others vary to some extent independently, and the resulting configurations make any generalizations difficult or impossible. We now feel more strongly than ever that anything we can say about higher education in modern societies is true somewhere, but nothing we can say is true everywhere. Moreover, we sense that the variability is so large and changes so rapid that it is difficult for the serious student of the modern university to speak with any degree of assurance about conditions in any institution at any given moment in time. It used to be said that students of higher education in European countries could address themselves most of the time to serious questions of policy, to questions of what should be done, with a reasonable sense that they knew the relevant facts about the institutions that they were called upon to advise. By contrast, in the United States equally serious students of higher educa-

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2) This is developed below, pp 203 ff.

tion had always to ask first, not what should be done, but what is happening, what is going on, what are the facts in the many institutions that make up our system. The American hesitation to generalize in the face of a multiplicity of forms and institutions of higher education is now being experienced by students and scholars in Europe who view much more varied systems than before WWII, and even, for the first time, little known stretches of higher education. And the resulting uncertainties lead Europeans, as they have Americans, to a natural reluctance to turn as quickly as before to the normative and policy question, what is to be done?

The other major difficulty facing the analyst today is the marked uncertainty that has been introduced into the development of higher education at many points. For example, in his contribution to a report on student enrollment patterns, Ladislav Cerych points to the difficulty in predicting student enrollments in higher education, and by inference, the consequences this uncertainty has for the development of fields of study, of institutions, and of national systems of post-secondary education. 3)

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3) Hecquet, Iqnace, Verniers, Christiane and Cerych, Ladislav, Recent Student Flows in Higher Education, Paris, OECD, 1976.

I have not discussed the effects of demographic factors on higher educational growth in this essay for several reasons. For one thing, the concepts of elite, mass, and universal access to higher education are predicated on the proportions of age groups, or a whole population, which gain some form of post-secondary education, and not on absolute numbers. In addition, the demographic factor in enrollment growth varies a great deal from one country to another, both in size and in timing. (See Recent Student Flows in Higher Education, Table 5, and accompanying charts, pp. 35-39.) Thus, while the demographic facts are of great importance to national planning of higher education in any specific country, they are somewhat irrelevant to a comparative analysis of the phases of development of national systems. It must be noted however, that threatened increases or dedreases in numbers resulting from demographic factors

And this uncertainty, as Cerych emphasizes, is linked to our inability to understand or predict changes in the numbers and proportions of qualified school leavers, or of their transfer rates to higher education.[4] On the basis of these and other findings, Cerych links complexity and uncertainty:

> "Both the considerably enlarged size of the system and its substantially more diversified or diffused nature would obviously seem to imply a further increase in the variety of attitudes, behavior and social factors influencing it. But if this is the case then the answer to the question why the analyst of today is faced with more uncertainty than his precedessor follows almost automatically: because his task is infinitely more complex."[5]

If we are to increase our understanding of the social forces surrounding the development of higher education, in the face of this growing complexity and uncertainty, it may be useful to review earlier analyses and predictions, and to focus especially on those that seem to have gone wrong, that have not been borne out by subsequent events. On the whole, our understanding has advanced more by confronting negative evidence which contradicts hypotheses and predictions (which are much the same thing) than by adding further illustrations in support of our theories. And I share with Kenneth Boulding the belief that the function of science is to point to our ignorance rather than to our knowledge. I therefore will examine critically some analyses and predictions of my own made five years ago for an OECD Conference on Future Structures

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can themselves stimulate government responses -- for example, the extension or loosening of numerus clausus restraints in various subjects -- that then have an independent influence on the proportion of cohorts enrolling in higher education.

4) *Ibid.*, pp. 45-47

5) *Ibid.*, p. 168.

of Post-Secondary Education, held in Paris in 1973. [6] If I examine my own writing critically it is not, I hope, an expression of inverted vanity, but, rather because I know more about the unwritten assumptions that were then in my own mind and lay behind my analyses and predictions than I do about those in anyone else's mind. Moreover, to undertake this kind of exercise on someone else's work is somewhat gratuitous, and apt to be resented.

I should say at the outset that my paper for the Paris conference was an effort, preliminary and incomplete in many ways, to set forth a simple conceptual scheme or model that would further the comparative analysis of the development of higher educational systems in advanced industrial societies. Some of what I said there I have since found to be useful and have continued to develop in other contexts. Other lines of analysis I believe are still potentially fruitful, although I have not followed them up. But still other sections, especially my analysis of the movement of European systems toward an American-style system of mass higher education, were, I believe, simply wrong in the light of what has happened since 1973, and perhaps were visibly wrong even then. It is these erroneous predictions in the paper that I want to discuss first.

The "Elite-Mass-Universal Access" Model of Development

In order to criticize it, let me first summarize the model briefly. The "elite-mass-universal access" model as sketched in my 1973 paper was an effort to bring together within one framework many problems of higher education which were too often dealt with in isolation -- such problems as student access and selection, the curriculum, govern-

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6) Trow, Martin, "Problems in the Transition from Elite to Mass Higher Education", Policies for Higher Education, from the General Report on the Conference on Future Structures of Post-Secondary Education (Paris: OECD, 1974), pp. 89-91.

ance, administration, finance, staff recruitment, academic standards, modes of instruction, institutional autonomy, academic freedom. These and other aspects of higher education are seen in the model as related to one another rather than as discrete or isolated problems. These clusters of problems and responses to them can, I suggested, be understood better if seen in light of a broad historical movement from "elite" forms of higher education, through mass higher education, towards universal access to some kind of post-secondary education. 7)

This broad movement, so the model asserts, can be observed in all modern industrial societies, but in each country it reflects the unique historical, social, economic, cultural, and political characteristics of that society. Thus, the concepts and ideas surrounding the "elite - mass - universal access" phases of development are not intended to describe or explain the higher educational system in any specific society at any given moment. Rather, the model is meant to provide a way of raising questions in a comparative context, and of generating problems for closer investigation and research in specific national systems and institutions.

A theory based on a conception of "phases of development", as this one is, necessarily focuses attention on the points or periods of transition between one phase and another.

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7) These "forms" of higher education are discussed in detail in my OECD paper, op. cit. Very briefly, elite education systems prepare up to 15 or 20% of an age grade for a traditional set of careers in teaching (university and university preparatory), the higher civil service and the established professions; mass higher education systems prepare up to 50% of the age grade for a wide range (indeed, almost all) of white collar occupations; universal access systems prepare even larger numbers for life in advanced industrial societies, severing the link between post-secondary education and occupations.

I suggested at several places in that paper that national systems experience special strains and tensions at the points of transition from elite to mass higher education, and will in the future as they move towards the provision of universal access to some kinds of post-secondary education. Some of these tensions and problems arise because of changes required in the way higher education is conceived by the members of the society, in the nature of the student's role, and in the role of the state. Other problems arise at these points of transition because different aspects of higher education change at different times and at different rates: for example, the social characteristics and motivations of entering students may change before the curriculum does, or enrollments may grow more rapidly than financial support.

In addition, the model stresses that a national system of higher education does not shift completely from one phase to another, but rather that institutions created in one phase survive into later phases. Thus, in every modern industrial society, elite institutions survive even as the system as a whole expands to provide mass higher education; and similarly, both elite and mass institutions survive into a period of near universal access. This stress on the diversity of modern systems of higher education in any given society -- a diversity both between and within institutions -- is a central theme in the model and allows us to ask, within its framework, how systems and institutions accomplish the academic division of labor as between mass and elite functions.

Underlying Assumptions of Common Patterns of Development

The underlying assumption behind such an effort to develop a simple conceptual scheme is that there were and are marked similarities in the patterns of development of educational systems across national lines. Now I still think this was a reasonable assumption, given the experience of the United States and Western Europe between the end of the second World War and the early 70's. There were many forces in common behind the very rapid growth of those national systems. All of the western countries came out of World War II with a broad commitment to a greater democratization of their social structures and their social services. All western societies, although with some variations in timing and degree, experienced rapid economic growth in the two decades after 1950. This growth provided resources for the expansion of higher education; it also created demand in the economy for the graduates of universities and higher technical colleges. At least as important, during those decades these societies all made larger commitments to public social services and to the political management of the economy, and this led to very substantial growth in primary and secondary education, health services, social welfare services, town and regional planning, and the like. All of this created continuing demands for the graduates of colleges and universities. Moreover, as we well know, the growth of the system itself created a very substantial demand for an increase in the numbers of research scholars and scientists for the academic profession itself. This is, on the whole, a familiar story, though aspects of it become a bit clearer as we move away from those decades in time -- for example, I think it is clearer now how very important the growth of the public services was in creating the demand for the products of the expanding institutions of higher education.

But there was another assumption in the writing of that time, including my own, the assumption that the patterns of growth of Western European systems would resemble the developmental processes that had marked the growth of higher education in the United States. I was not unaware of the marked historical, social, cultural and political differences among the Western European countries and between them and the United States; nevertheless, I tended to believe that the dynamic processes of growth that had been set off in Western Europe during the 50's and 60's would have a life of their own, and would exert an autonomous pressure on those societies for a continued expansion of their systems of higher education. I did not assume that all the institutional forms would be the same as in the United States, nor was I prepared to make predictions about how fast or far growth would go. Nevertheless, I believed that once the European nations expanded their systems to include 15 or 20% of the age grade, and made the institutional changes that such an expansion required, growth could then continue in these now reformed systems toward inclusion of 30, 35, perhaps 40% of the age grade without great difficulty. By 1973, many European countries including West Germany, Belgium, France, The Netherlands, Sweden and the United Kingdom were admitting over 20% of the relevant age grade of high school leavers to some form of higher education. 8) Watching this development over a decade and a half, I had come to believe that as European nations expanded their systems, particularly on the non-university side, supply would begin to generate demand. Attitudes in their populations toward higher education would begin to change, leading larger sections of society to see college or university as appropriate for them and their children. In addition, I thought, parts of the occupational structure would change in response to the larger supply of educated people and begin to demand these qualifications or expect them for entry, thus increasing in a permanent way the demand for graduates. I also assumed that the efforts being made in most of the Western European countries to encourage students to stay on in higher secondary schools through the completion of their academic secondary education, and to gain the qualifications necessary for entry to higher education, would

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8) Cerych, et. al., op. cit., Table 6, p. 41.

bear fruit. I also assumed the transfer rate of qualified students would continue to rise. A passage from my paper for the Paris Conference in 1973 suggests some of the thinking that underlay what now seems to be a quite mistaken prediction about the course of European higher education in the coming decade.

> "Among the secular trends in higher education that we can reasonably expect to continue for the rest of the century the most important are growth, democratization and diversification.
>
> ### Growth
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> Despite the problems that the growth of higher education brings in its train and despite the arguments one hears from various quarters that the growth should be slowed or stopped, it seems very unlikely that any advanced industrial society can or will be able at any time in the near future to stabilize the numbers going on to some form of higher education. This is true for a number of reasons that will probably be compelling for any government or ministry.
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> There is almost certainly going to be a continued popular demand for an increase in the number of places in colleges and universities. Despite much loose talk about graduate unemployment or over-supply of educated men, it is still clear that people who go on to higher education thereby greatly increase their changes of having more secure, more interesting and better paid work throughout their lives. The concern of young men and women and of their parents for access to the best and most highly rewarding jobs in the society (rewarding in every sense) will insure that the demand for places continues to be high.
>
> These rational calculations and anticipations initially affect those people (and their children) who are, so to speak, at the margin of higher education, who would a few years earlier have ended their formal education on the completion of secondary schooling. But growth and the movement from elite to mass higher education itself creates a set of social and psychological forces which tend to sustain it. As more and more people go to college or university, and as an even larger number become aware of it as a possible and reasonable aspiration for themselves and their children, higher education enters into the standard of living of growing sectors of the population. Sending one's sons and daughters to college or university increasingly becomes one of the decencies of life rather than an extraordinary

privilege reserved for people of high status or extraordinary ability. Giving one's children a higher education begins to resemble the acquisition of an automobile or washing machine, one of the symbols of increasing affluence - and there can be little doubt that the populations of advanced industrial societies have the settled expectation of a rising standard of living. But, in addition, sending one's children to college or university is already, and will be more so in the future, a symbol of rising social status. Not only does it give evidence of status mobility in the adult generation - in this respect resembling the purchase of a home in the country or an automobile - but it also lays the necessary foundation for the social mobility of a family across generations. Everywhere the numbers of people who have completed secondary education grow, and as more people complete secondary education the more necessary it is for their children to go on to higher education if they are to qualify for still higher status occupations. This is increasingly the case as more and more occupations require a degree or other higher education qualification for entry.

The wishes of parents and youngsters to go on to higher education would of course be inhibited if there were no growth in the jobs that "require" post-secondary education. On this score there is presently much talk of an oversupply of graduates and of a decline in the market for people who have had further education. But there is little evidence of that oversupply, and this will certainly remain the case for the next three or four decades. For closely related to the growth of demand for places, which might be called the push from the general population, there is the pull of the economy, marked particularly by the continued growth of the tertiary or service sector of the society. This takes two forms. One is the growth of those occupations which traditionally or presently require higher educational qualifications. The growth of every advanced economy is marked by a much more rapid growth in the numbers of managerial and technical personnel than of manual or skilled workers. The rationalization of production and the growth of industrial and commercial organisations generate enormous bureaucratic structures which in their middle and higher reaches clearly call for the skills, attitudes and orientations that are provided by post-secondary education. Moreover, there is a whole range of new and semi-professions, particularly those linked to the welfare functions of government - the social workers, penologists, experts in environment, transport, housing and urban problems - which call for advanced training.

In addition, and equally important, is the educational inflation of occupations. As the supply of educated

> people grows, job requirements are redefined so that occupations which formerly were filled by secondary school graduates are increasingly restricted to people with post-secondary education. It may be argued that many of these jobs - for example, the middle levels of business management or public administration - do not need formal post-secondary education. But, in fact, growing numbers of people with more formal education compete successfully for these jobs with people who have less formal qualifications. Once in those jobs, they tend to reshape them by exercising responsibility, taking initiative and applying skill and imagination in ways that the job may not have "required" when it was being filled by people with lower qualifications. This is an aspect of the impact of the extension of higher education on the occupational structure that manpower analysts almost never take into account, partly because until recently graduates had been going into traditional graduate occupations rather than redefining and reshaping jobs formerly filled by people who had not been to college or university. One of the most important aspects of the movement from elite to mass higher education lies precisely in this transformation of jobs by people of greater education than were employed formerly in those jobs ...
>
> Alongside these social, psychological and economic forces are the institutional changes in secondary education which bring more and more students to the point of college or university entry. The raising of the school-leaving age, the broad extension of university preparatory studies, the spread of comprehensive schooling, are all institutional encouragements to students to stay on longer and to qualify for entry to college or university. The extension of educational opportunities in secondary education reflects both the fundamental democratization of modern society and changes in the economy mentioned earlier. But it works independently of these other forces to increase the pool of young men and women "at the margin" of higher education - and thus the absolute numbers and the proportion of the age grade - who are able to pursue further studies in response to a variety of other economic and social motivations." [9]

Now, on reflection, I still believe that to be a reasonably accurate account of some of the mechanisms that underlay the growth of mass education *in the United States*. And what I was saying in that essay was that if European systems were going to grow into systems of mass higher education, they would be driven by some of these same forces. On the whole, I believed that they were going to continue to grow, although I had some reservations. In the same paper, I suggested that growth was dependent on greater diversity, and especially on the creation of a large sector in the higher educational system marked by lower costs and academic standards, and more responsive to market demands than to the autonomous and inner logics of the academic, scientific and scholarly disciplines. And I believe that the relatively greater centralization of control over higher education that was true of European countries as compared with the United States, would tend to work against the growth of diversity in their systems that I thought was necessary for continued growth. I suggested, for example, that,

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[9] *Ibid*., pp. 40-43.

> "Planning for a system marked by diversity runs against the habits and structures of educational planning in most European countries. Planning for diversity clearly involves risks, whereas prescriptive planning gives the illusion of meeting a contingent future more effectively (though quite possibly the reverse is true). Prescriptive planning and the central administrative and control structures which make it possible are, as suggested earlier, the enemies of diversity because diversity makes prescriptive planning and control more difficult and because it violates the principles of equitable treatment by government agencies and equality of status of public institutions. For these and other reasons it seems unlikely that those governmental agencies which have the responsibility for higher education can or will surrender their control.
>
> Thus, on balance, it would appear that in most European countries the forces working against genuine diversity in higher education are rather stronger than those working to sustain or increase it."[10]

Thus, on reflection, I was pointing to a dilemma which I was unable to resolve. On one hand, I argued that growth would continue to be driven by a variety of forces, mostly located on the demand side, that is, not within governments or the universities themselves but within the larger society. On the other hand, I suggested that national governments would not be highly committed to indefinite growth, and whould not be inclined to create the diverse system of institutions that would be necessary to stimulate and sustain it. I now believe that, on the whole, I was right to suspect that governments would not surrender their control over their systems of higher education in the service of larger and more anarchic systems. But on the other hand, I overestimated the strength of the forces for growth stemming from a demand for places in higher education from the general population, or a demand for graduates from the economic institutions.

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[10] Ibid., p. 98.

Some Sources of Error

It may be useful now to ask why predictions based on these assessments of the forces making for growth (and I was not the only one to make them,[11]) were mistaken: that is, why was it that European countries have not, over the past five years, and perhaps for this whole decade, been moving towards a development of systems of mass higher education enrolling 40 or 50% of the age grade, as in the United States or in Japan?

If I cannot answer that question with great conviction, I can perhaps offer a few thoughts about it.

First, the growth of higher education obviously depends on an increase in the number of students who finish their advanced secondary school education and qualify for entry to colleges and universities. In 1972 and 1973 I assumed that in European societies, as in America, the desire to continue formal education through the higher secondary schools would grow along with basic changes in attitudes toward advanced education in these societies. Again, draw-

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11) See, for example, Hecquet, Verniers & Cerych, op. cit., p. 44.

ing upon my American experience, I tended to assume that attitudes favorable toward continuing formal education would move gradually from the upper and upper-middle classes more and more deeply into the middle and lower-middle classes, and even, with encouragement from progressive governments, into the working classes. I had seen that happen in the United States until the proportion of school leavers with a high school certificate reaches over 75% Moreover, while I understood that the academic qualifications for entry into European systems of higher education were on the whole higher than for an American high school diploma, I did not believe that the reserve of ability had been exhausted in the 15-25% of the age grade who were then gaining upper secondary school leaving qualifications in most European countries. Moreover, I was impressed by the efforts various countries were making to ease those qualifications and to extend the opportunity for qualifying to larger sections of the population; the abolition of the matriculation examination in Sweden, and the growth of comprehensive schools, along with the raising of the school leaving age in Britain, were examples of this movement toward the democratization of the upper secondary schools. Nevertheless, on the whole there has not been this growth in demand for entry arising out of a steady growth in the numbers and proportions of school leavers qualified for entry to higher education. Moreover, while the numbers of school leavers with these qualifications have not been growing, the transfer rates to higher education of those who are qualified haven't been growing as they were expected to either, and in many countries have even shown a decline since 1970. In his essay in the volume which documents this slowdown in the growth of qualifiers for higher education and their transfer rates, Ladislav Cerych observes that "The finding that many qualified secondary school leavers and/or their transfer coefficient to higher education have decreased in the early 70s, or grown less rapidly than expected, is among the most important and probably the most surprising of the analysis of student flows in ... this report."[12]

In trying to explain that phenomenon, several factors come to mind. Cerych himself suggests that the slowdown in the transfer rates may reflect the impact of new policies, in particular those related to the concept of recurrent education. In a sense, he is suggesting that the efforts to provide for recurrent education may encourage school leavers, even those with qualifications, to delay entry into higher education for some years, until after they have gained some work experience. And he points to Sweden as the best evidence for such an explanation. He finds further support for this suggestion in the sudden increase of newly registered students in the past few years in Sweden, which implies "at least in part, the development of an entirely new clientele in higher education, not only of students who have interrupted for a while their formal educational careers but also of those whom Swedish policy has strongly tried to favor -- for example adults without completed secondary education, participants in the 25/4 scheme, students taking single courses, etc."[13] And Cerych suggests that while this trend is clearest in Sweden, which has made the most explicit provision for recurrent education, it may also be present in other countries such as Britain and the United States which have also made provision for the education of adults.

But while they affect transfer ratios, expanded provisions for recurrent education would not explain the lack of growth in the proportion of the secondary school population which stays on and gains upper secondary qualifications. And in reflecting on why my predictions on that score did not come true, I suspect that I did not give enough weight to the strongly held attitudes of Europeans toward upper secondary schools, and the long historical links of those schools to the learned professions and to elite forms of higher education, particularly the universities. If, to enter that world was a mark of high academic ability, or more often, of high social class origins, then ordinary people in European countries on the whole have not thought attending university was appropriate for themselves or their children, despite what their progressive governments may have wished. The United States, by contrast, had no such long-standing link between its not very elite comprehensive high schools and its elite forms of higher education. In the United States, class-linked attitudes toward education are much weaker, and the view of education as an important avenue of mobility, and the more of it the better, is much more widespread even among working-class families and ethnic minorities. Thus, in America, cultural or class values and institutional barriers inhibiting young Americans from staying on in high school until graduation were much weaker, and in some places, altogether absent. And a high school diploma, in America, is sufficient to gain entry to some form of postsecondary education.

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[12] *Ibid*., p. 164.
[13] *Ibid*., p. 164-165.

Involved here are differing concepts of social mobility, and of the role of education in achieving such mobility across generations. It may be that we are seeing one manifestation of the stronger class identifications and structures of European society, which not only have economic and political but also cultural manifestations. And among the latter are these stronger class-linked conceptions of how much and what kind of formal education is appropriate for people in different class positions. This is an old story, but one which may not be changing as much or as rapidly as we thought, or wished. Nor are these attitudes as responsive to public policy as we have imagined.

An additional factor may be the better job opportunities that have been available to school leavers in most European countries as compared with the United States in the past decade. Ladislav Cerych suggests that the employment situation is not of great help in predicting higher education enrollments. "Obviously, it has an impact on student decisions whether to enter universities or other institutions but the last few years have shown that this can operate both ways. Graduate and/or generalized unemployment can be either a deterrent or on the contrary an incentive to enrol, and for the moment we are unable to say when and under what conditions it is the former or the latter." 14) But while this may well be true in considering the fluctuations in unemployment rates among school leavers in European countries, youth unemployment may operate in a more consistent way on higher education enrollments as between Europe and the United States. I am suggesting, on the basis of a recent review of youth unemployment studies from a number of different industrial nations, 15) that structural unemployment of youth is substantially higher in the United States than elsewhere, and is likely to continue to be so despite the rise in youth unemployment in most European countries during the recent economic recession. Why the job market for 18, 19 and 20-year olds in the United States is relatively poor compared to European societies is a question which I cannot discuss here. But whatever its causes, it almost certainly helps account for the greater readiness of American youth to remain in formal education through high school and on to some form of post-secondary education as compared with European youth.

Thus it may be that the attitudes of secondary school students toward higher education will be a greater con-

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14) Ibid., p. 161.

15) Gordon, Margaret, ed., Youth in Contemporary Societies, San Francisco, Jossey-Bass, forthcoming, 1979.

straint on the growth of European systems of higher education than the traditional and structured (but now declining) conservatism of its institutions of higher education. These attitudes may be reinforced by the narrowing of wage rates between youth and adults over the past decade resulting from trade union and government policies, a narrowing which allows youngsters to contrast a precocious and affluent adult status at age 17 or 18 if they do not go on to post-secondary education, with the dependency and relative poverty of university students, still in statu pupillari at age 21, 22, 23 or older, and with no guarantee of the jobs or careers once thought appropriate for university graduates. But there is clearly a danger of forecasting too little change in popular attitudes of higher education among European youth and their parents, where once we anticipated too much too soon.

The Power of the Market

In reflecting on why the European nations have seemed to reach something of a plateau in the growth of their higher educational systems, it may be enough to point to the absence of growth in demand for places from secondary school leavers. But there is another factor worth mentioning, if only speculatively. In my 1973 essay, which compared the United States and European nations, I did not place enough weight on the role of the market in American higher education, as contrasted with the insulation of European institutions against the effects of markets. I therefore did not pay enough attention to the power of the market in shaping institutional behaviors, which in turn have an effect on the growth of educational systems. When we speak of the market forces in American higher education, we do not speak only of the 1,600 private colleges and universities which enroll about one-quarter of all American students; we are also speaking of the public institutions whose budgets, like those in the private sector, are closely tied to enrollments. Except for a handful of very wealthy institutions in the private sector, the great majority of American colleges and universities depend on enrollments for survival, or if not for survival, then for the resources they uniformly feel they need to accomplish their purposes.

The connection between American higher education and markets on both the demand and the supply side has been present almost from the beginning of our national life; it is I think the largest single institutional difference between American higher education and the European systems. And it has very many consequences for every aspect of the life of higher education. In the present context its effect has been to give almost every American college and university a strong incentive to attract and to hold students by attending very closely to what they want to study, and especially to what studies they want which will be in demand in the job market when they leave. For most American institutions, if enrollments fall, budgets fall. This is true for the public as for the private institutions. And the most common way for these colleges and universities to increase their resources is to take on additional functions and programs so as to attract more students. So in American higher education, both in the individual institutions and finally throughout the system as a whole, the strongest motive for encouraging enrollment in every possible field of study and at every level of achievement and standard are these market pressures. The result, as we know, is an enormous diversity in the student body and an equally wide diversity in the forms of higher education. The extraordinary range of academic and vocational demands are met by a kind of academic division of labor both within and between American institutions. (Incidentally, one reason that these very close links between American higher education and the market are not more commented on by Europeans is that they are least strong and least visible in the elite American colleges and universities that Europeans know best.)

But however odd, and even ludicrous and undignified, this connection between higher education and the marketplace may appear to Europeans, I think the case can be made that it suits American society pretty well. It was perhaps inevitable that the American system should have developed this way, given the extreme dispersion of governmental power under our federal system, and the profound weakness of central government during most of our history. The one serious effort to create a strong national university made by President George Washington and his immediate successors at the very beginning of our national existence might have led to a development of higher education much more like that which has characterized European countries. 16) That is mere speculation, since the efforts failed, and since then no central power at the national level has been able to either govern or finance our system of higher education. The absence of that central power insures that many authorities govern our institutions, without any having a monopoly on the provision of places. This has led to a sharp competition among institutions for prestige, for scholars, and currently and very sharply for students, and that in turn has led to the diversity of a complex ecological system. This system works, after a fashion, in the United States, and something like it works, rather differently, in Japan. But it has its drawbacks as well as its strengths, drawbacks which Europeans are more likely to know, or at least be more sensitive to, than are Americans.

I do not want to suggest that European institutions are insensitive to market pressures; where they are sensitive, they respond in ways similar to American institutions.

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16) Trow, Martin, "Aspects of Diversity in American Higher Education," in Herbert Gans, ed., Essays in Honor of David Riesman, University of Pennsylvania Press, forthcoming 1979.

For example, Hecquet and Verniers suggest that when faced with lower or declining enrollments,

> "... the capacity of [European] higher education to adjust to this new situation should not be underestimated. Accustomed to a regular growth in their resources and still with a very young staff, universities are likely to make strenuous efforts to safeguard their level of income and research activities, and to do this they must maintain a sufficient number of students. This suggests that they will try, as some are doing already, to make up for diminishing enrollments from traditional sources by attempting to attract a more varied clientele. There are a number of things they can do, such as making their courses and timetables more flexible, renewing and diversifying teaching methods, collaborating with non-university institutions, endeavoring to meet the particular demands of certain social groups, and so on. And indeed, several of the experiments briefly mentioned [earlier] ... show that moves in this direction are already getting under way. Thus structural changes and transformations in teaching methods, long recognized as necessary but never thought likely to be introduced while student numbers remained high, might get underway in the present climate of slower growth." 17)

But the same authors note elsewhere that the major institutional efforts in Europe at extending diversity, for example, through the creation of the Gesamthochschulen in Germany, the I.U.T.s in France, and the British Open University, have had as yet a relatively slight numerical impact on enrollments in higher education. Whatever their academic virtues, these are products of central state planning rather than the sensitive responses of local institutions to market conditions and demands. The latter, I believe Europeans will agree, is more difficult to accomplish in its more highly centralized systems, though I would be extremely interested in seeing whether such efforts as Hecquet and Verniers describe merely draw students from one institution to another, or have a cumulative impact on overall enrollments in higher education in a given country. So far, I suspect the former. Nevertheless, insofar as European institutions develop the habit

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17) Hecquet, et. al., *op. cit.*, p. 85.

and capability to "make strenuous efforts to safeguard their level of income and research activities" by attempting to attract a more varied clientele, they will come to resemble, in this respect at least, the American institutions which have been doing the same thing for a long time. And if they do that, they will be exerting the kinds of institutional pressures for growth toward mass higher education that I was predicting, perhaps only a bit prematurely, in my 1973 paper.

Problems of Prediction

In this paper I have stressed the importance in Western European countries of class attitudes towards higher education, and the constraints that those attitudes place on the growth of systems of post-secondary education in those countries. But the difficulty of predicting future developments in higher education is not due solely to erroneous predictions in this one area, but is inherent in the very great number and variety of forces that shape those systems. Figure I is a schematic representation of some of the more important forces that influence, directly, or indirectly, the proportion of the appropriate age grade who enroll in some form of higher education in a given Western European country at a given time. (Diagrams for the United States, for East European or for developing countries would each look rather different.) The direction of the arrows in this diagram indicates the direction of major influence.

Figure I. Major Forces Affecting the Size, Shape and Characteristics of Higher Education Systems in Western European Societies

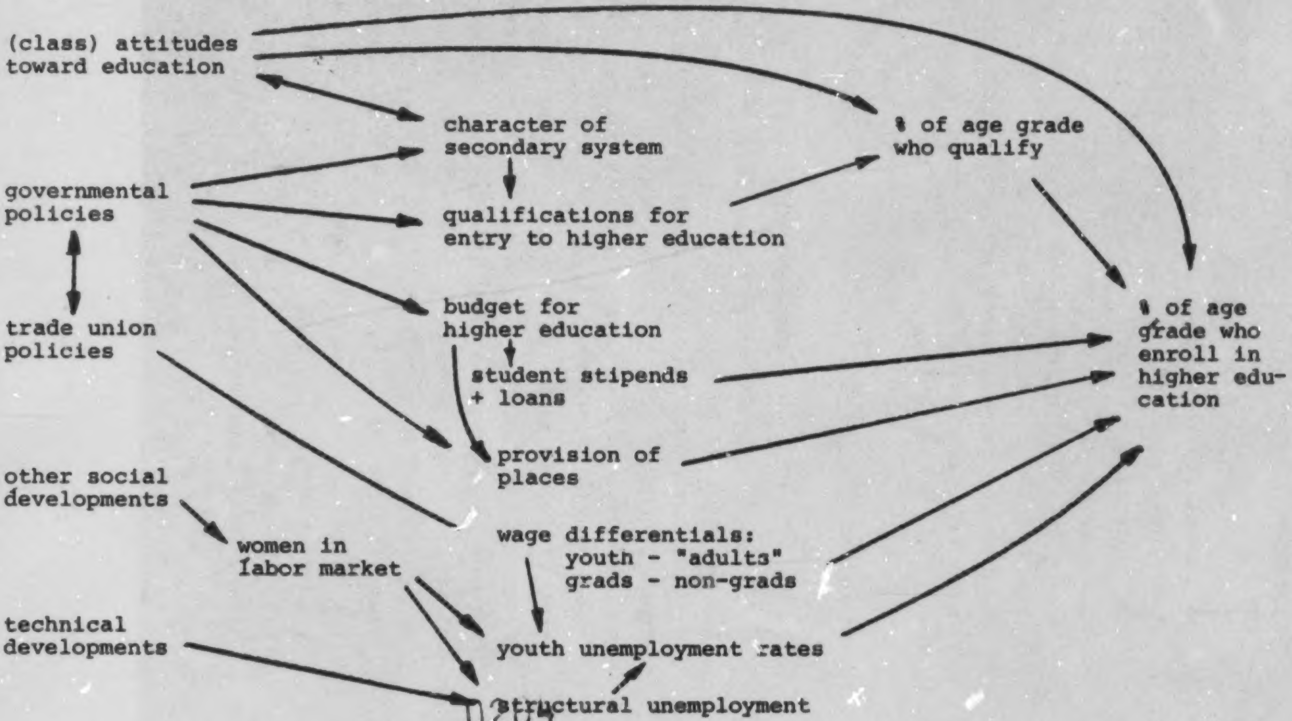
(class) attitudes toward education
character of secondary system
% of age grade who qualify
governmental policies
qualifications for entry to higher education
budget for higher education
trade union policies
% of age grade who enroll in higher education
student stipends + loans
provision of places
other social developments
women in labor market
wage differentials: youth - "adults" grads - non-grads
technical developments
youth unemployment rates
structural unemployment

Figure I
(Continued)

numbers and characteristics of students

1. % of age grade
2. age distribution
3. distribution of motivations of strength & kind
4. distribution of academic ability
5. distribution of academic preparation
6. distribution: full or part-time enrollments

numbers and characteristics of institutions

1. numbers of institutions
2. types of institutions
3. qualifications for entry
4. distribution of curricula
5. numbers + qualifications of teachers + professors (structure) (staff/stud. ratio)
6. modes of governance
7. relations to state

character of system of higher education:

elite - mass - university access

In Figure I we can see the links that we have been discussing above between class attitudes towards higher education and the proportions who enroll in its institutions. These attitudes affect enrollments directly, and also through their influence on the proportion of you who qualify for entry to higher education. But in addition to the attitudes towards higher education held by parents and students in different social classes, there are three other broad sets of factors that shape post-secondary enrollments, also shown schematically in Figure I.

1. First there is a set of factors associated with the character of a nation's secondary school system: for example, whether it is a comprehensive or differentiated system, with one segment functioning primarily as the preparatory system for post-secondary education. This question is linked to the issue of what qualifications are required for entry to post-secondary institutions, and what part of the secondary system provides or prepares students to gain those entry qualifications. And all of this, in turn, is in most European societies a direct reflection of central governmental educational policy.

2. A second set of forces affecting post-secondary enrollment rates results from the level of financial support that a nation provides for its system of higher education. To a considerable degree, the supply of places in post-secondary education shapes demand for higher education. In many countries government policy is at least nominally designed to meet the "qualified" demand by creating as many places in post-secondary institutions as are necessary to provide for all students who gain the statutory entry qualifications. In practice, however, ministries and governments can encourage or discourage enrollment at least to some degree by creating or not creating places, especially in subject areas of high demand such as physics, medicine and the biological sciences. In addition, govern-

ment policy influences enrollments by determining the level of fees that students must pay, and the levels of support through grants or loans that are available to students. Even where governments assert that their policy is to accomodate all qualified students, there are many ways in which they can encourage or discourage a growth of enrollment within that broad policy.

3. A third set of forces shaping post-secondary enrollments arises out of characteristics of the job market for school leavers, as compared to the short and long-run returns in the job market for gaining a degree or certificate from an institution of post-secondary education. Such factors as unemployment rates among school leavers, wage differentials between graduates and non-graduates, and between young people just out of school and adult workers, are among the forces influencing the proportion of students who gain qualifications for entry to post-secondary education, and also the transfer rates of those qualifiers. But these labor market factors in turn are influenced by a variety of other forces: for example, legislation affecting wage differentials and the minimum wage; cultural changes, such as the growth in the proportions of working women in many countries, tending to raise youth unemployment rates; and technological changes, affecting, for example, the number of unskilled jobs, while raising or lowering skill levels in various industries, and affecting the job market and its demand for persons with advanced levels of formal education. And here we cannot overlook trade union policies, which influence youth employment directly by their attitudes toward apprenticeship and wage differentials between age and skill levels, and indirectly through their influence on governmental "welfare" legislation in this area. For example, in many countries post-secondary education is in more or less direction competition for public resources with such alternative uses as vocational education, unemployment insurance, and old age pensions.

These are only some of the social, cultural and political forces affecting the growth of higher education. But very few of these forces are easily predictable very far ahead, and even where one can try to make predictions, for example about the broad direction of technological change, it is difficult if not impossible to predict second and third order effects on attitudes towards work, on government legislation, or on the market demand for workers with varying amounts of formal education. It may be that on the principle of Occam's Razor we can "explain" the slowing of growth in European systems by reference to the slowing or stabilizing of the proportions gaining or exercising rights of entry to those systems, and that in turn, though more provisionally, by reference to the stability of class attitudes toward higher education. But the more general point is that there are simply too many forces involved to allow us to predict with much assurance what the rate of development of European systems will be even five or ten years ahead. The only factor of any importance that we can predict as far as twenty years ahead is the demographics of population growth. This factor is excluded from the chart, not because it is unimportant, but just because it is more or less known. But just because it is known, it provides a somewhat spurious degree of assurance for predictions of future enrollments, spurious because predictions made on the basis of demographics alone assume that all other forces bearing on higher education will not change appreciably in their strength or character over the same time period.

The net effect of all the forces sketched in this diagram, and of others which I may have overlooked or which are of significant though lesser weight, are shown in the diagram as shaping the proportions of the appropriate age grade enrolled in some form of post-secondary education. (With the growth of life-long learning, it may be that the summary effect of these forces should be the proportion of the adult population enrolled in those institutions.) But this summary effect is only a rough and highly simplified indicator of the character of a national system or post-secondary education. Such a system is more adequately described by the size and characteristics of the student population, and by the size and characteristics of the institutions that make it up; and some of those characteristics are shown in Figure I - as the outcomes of the social, economic, political and cultural forces mentioned there. As I have suggested in this essay and elsewhere, these characteristics of students and institutions are not randomly associated with one another, but cluster together in three major distinctive configurations or phases which I have termed elite, mass and universal access systems of higher education (with the important qualification that in each successive phase, the functions and institutions of the earlier phases survive.) Thus, while we may recognize that the multiplicity of forces that shape the growth and transformation of national systems may be beyond our power to predict, the results of those forces are systems which it is not beyond our power to analyze and to illuminate.

Reflections on the Model

What, we may ask, has been learned from this exercise? Is it simply that the concepts of elite, mass and universal access to higher education are not useful to our understanding of our institutions or systems? Do these examples of predictions unfulfilled show the disutility of those ideas?

I think not. My present feeling is that in the future I (and perhaps others) will be more wary about making cross-national predictions of educational development; that those patterns are too much affected by the peculiar history, traditions, laws and politics of each specific country, and also too much affected by unpredictable events to allow useful predictions for more than a few years ahead. On the other hand, these concepts and the ideas associated with them may still be very useful for formulating interesting, important, and even useful questions for investigation within national systems and individual institutions. Cerych reminds us in his essay, already cited, that

> "I have argued elsewhere that we are witnessing not so much a development from elite, mass or universal access to higher education assumed only a few years ago, but a trend toward what might be called a diffused system: diffused because of the blurred separations between its different levels and the teaching content of different institutions; because of the indetermination regarding its points of entry and exit; diffused also because it becomes more and more difficult to define what is and what is not higher education." 18)

My own view is not far from this. In my 1973 paper I observed in a section entitled Caveats that

> "It must be emphasized that the movement of a system from elite to mass higher education, or from mass to universal higher education, does not necessarily mean that the forms and patterns of the prior phase or phases disappear or are transformed. On the contrary, the evidence suggests that each phase survives in some institutions and in parts of others while the system as a whole evolves to carry the larger numbers of students and the broader, more diverse functions of the next phase. Its newest and gradually its most important institutions have the characteristics of the next phase. But in a mass system elite institutions may not only survive but flourish; and elite functions may continue to be performed within mass institutions. (Similarly, both elite and mass institutions survive as the United States moves towards universal access to higher education.) But this observation points to a characteristic problem of all mixed-phase systems: the problem arising from the strains inherent in the continuing existence of forms of higher education based on fundamentally different principles and oriented to quite different kinds of functions. The question follows:

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18) Ibid., p. 168, footnote 2.

> how successfully, through what institutions and mechanisms, does a system continue to perform elite functions when the emphasis of the system has shifted to the forms and functions of mass higher education? How successfully can a system perform diverse functions which require quite different structures, values and relationships - especially when central governing agencies are pressed by both bureaucratic rules and egalitarian politics to treat institutions and individuals equally and in standard ways?" 19)

The mixtures and indeterminate forms of higher education that Cerych describes are in my view a result of the continued existence of elite and mass forms of higher education within the same system and within the same institutions. (In some countries, there are added elements of universal access to higher education.) It seems to me that a whole series of important educational problems arise out of the relations between these different forms of higher education co-existing within the same system or within the same institution, with their different standards, modes of instruction, patterns of student-teacher relations, etc. The questions about these problems that I raised in my 1973 paper are, I think, still pressing and important ones; not merely "interesting" intellectual or academic issues, they are also difficult policy problems. Should systems seek to find ways to preserve these different forms of higher education? And if so, how should the academic division of labor be accomplished -- between institutions or within institutions? And should the differences be preserved or reduced -- is the very survival of this distinction between elite and mass higher education a reflection of a class-ridden or outmoded conception of higher education? The reforms of Swedish higher education that implemented the recommendations of U68 had as one of their aims to reduce the gulf between the university and other forms of higher education, that is, between elite and po-

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19) Trow, Martin, op. cit., p. 73-74

tentially mass institutions, and thus reflected an effort to develop a more homogeneous, one-class system in higher education. But how successfully can this be accomplished, through what means, and with what concequences for both the elite and mass institutions, and their special and differing functions, which this reform aims to amalgamate? I believe that the most interesting and significant questions in all Western countries arise precisely out of the tensions between the forms and characteristics of elite and mass higher education. If that is the case, then it may still be useful to employ both concepts and the ideas surrounding them.

Two Uses of the Model

The model of elite, mass, and universal access phases in the development of higher education has been put to two quite distinct uses. On one hand, the model can be seen as a "phaseology" of historical development of the higher educational systems in advanced industrial societies which is predicated on the gradual but indefinite expansion of enrollments in those systems as a proportion of the appropriate age grades. This conception makes the model independent of demographic changes, since it is keyed not to numbers but to the proportions of the population which eventually gains some kind of experience with post-secondary education. For the same reasons it is to a considerable extent independent of shifts in the age of enrollment resulting from the growth of recurrent education. Indeed the model assumes and predicts a growth in the numbers and proportions of older students as systems develop mass and especially universal access forms of higher education.

The model did not assume that systems changed uniformly and homogeneously from one phase to another; as I have pointed out it predicts that new forms of higher education would not so much supersede as be added on to the old. And the system could only be referred to as a "mass" or "universal access" system by reference to its most recent additional forms and functions, and could be so described only at the risk of forgetting the survival of earlier but still persistent forms and functions.

The model distinguishes these forms or stages of higher education by reference to characteristics of the students' motivations, and conceptions of the student career; by the forms of student-teacher relations; the institution's degree of concern for shaping character as over against transmitting skills and knowledge, the nature of institutional governance and administration, and other characteristics both of organizations and the people within them.

The model envisioned the movement towards larger and more differentiated systems, and saw this movement as powered by forces both in the population of modern industrial societies and in their governments, the latter responding to social, political and economic pressures to create more places in popular (i.e., mass) rather than "autonomous" (i.e., elite) institutions.

This phaseology of higher education -- both the nature of its development and the forces presumably driving it -- is heavily based on American models. To the extent that European patterns, both of demand and of institutional response differ from those American models, then predictions based on them would go awry. Over the past five or ten years it has become clearer that student demand patterns especially have not been developing in European countries as they have in the past in the United States, nor are institutional responses similar, though here differences may be growing smaller.

To sum up the two broad uses of the model:

A. The first is historically oriented: it predicts developments in national systems over time, based on a phaseology, and on assumptions about changes, and the consequence of changes, in national attitudes, student recruitment, institutional responses and changes in other parts of the society, all tending to occur as functional adaptations to one another. This use of the model gives special attention to problems arising at the points and periods of transition between phases, when the elements of the systems are not functionally congruent.

B. The second use of the model illuminates the relationships between parts and elements of systems and institutions; it is not historically but functionally oriented. Where the first use is based on assumptions about the functional adaptation of elements of higher education, the second takes that as problematic. Its central interest is the study of the academic division of labor among the several forms, both between and within institutions. It pays special attention to problems at the boundaries between the different forms of higher education, either within or between institutions.

This second use of the model does not depend on the assumption of a steady progression of higher educational systems from elite toward mass and eventually to universal access. Thus in this form the model is not so heavily dependent on the similarity of American and European patterns. It addresses the nature and distribution of forms of higher education within national systems or institutions, and offers a set of tools for analyzing the academic division of labor as between elite, mass, and universal access forms. The criterion of the usefulness of the model for these purposes would not be the accuracy of its predictions about growth and differentiation of national systems of higher education, but whether the model helps us understand the workings of different kinds of higher education systems and institutions, and their component parts.

If the test of the model in its first use (as a phaseology of development) is prediction, the test of the second (as a set of concepts and hypothesized relationships) is illumination.[20] Moreover, the first use chiefly addresses the public lives of higher education: such issues as organizational structures, modes of finance and the institutional links between higher education and secondary education, the economy, and government. The second use addresses itself more to the private life of higher education, the actual processes of teaching and learning that go on within institutions, and seeks to suggest characteristics, processes, strains and tensions that develop in these teaching and learning processes that are associated with the academic division of labor.[21]

Finally, one great test for such an analytical model is whether it helps us understand better the relationships between higher education and the public authorities who in most countries provide the bulk of financial support, and in all countries carry the ultimate responsibilities for the strength and freedom of our institutions. Can governments help to insure that higher education contributes to the health and welfare of societies as a whole,

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20) It is true that to "illuminate" a complex institutional arrangement, and thereby to understand it better, may allow us to "predict" more accurately how it will evolve. But there remains a major difference between predicting long-range developments of national systems, for example, and understanding why it is so difficult to establish programs for recurrent education in elite universities.

21) I have made use of the model in this second way in my paper on "Elite Higher Education: An Endangered Species?", Minerva, Vol. XIV, No. 3 (London: Minerva, Autumn 1976), pp. 355-76.

without destroying the freedom that colleges and universities require? In my view, the central question for the future of education in all modern industrial societies is how well it solves this question of the right relations between the university and the state. Put slightly differently, the great problem facing all of our systems of higher education is not financial or intellectual, but political -- that of defining the delicate balance between "autonomy" and "accountability". The usefulness of the model to clarify and contribute to that discussion has still to be demonstrated. 22)

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22) An early effort in this direction can be seen in Trow, Martin, "The Public and Private Lives of Higher Education," Daedalus, Vol. 2, (Winter 1975), pp. 113-27.

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REPORT FROM DISCUSSION GROUP
GROUP 3 — rapporteur Lars Owe Dahlgren

The discussion in the group was centered around two main themes, each divided into three major issues. The discussion was concluded by the identification of some important research problems. The disposition of this summary of the group work will follow the temporal order of that of the discussions.

The two main themes are the following:

I Substantive issues of high priority for R & D on higher education.

II Issues pertaining to R & D policy as such.

I SUBSTANTIVE ISSUES

A Diversification

The first problem area to be treated under this headline is that of the horizontal and vertical diversification that is becoming a characteristic feature of many departments.

In particular university departments, where the number of enrolled students is diminishing, have attempted to retain their economic and staff frameworks by means of diversification in many cases creates a conflict between on one hand the need to create "enclaves of excellence" within all the subjects in order to be able to satisfy the future need for teachers in the different subjects at the universities, and on the other hand the ability to satisfy the increased demand for further education from groups not previously having had access to the educational system's tertiary level. Diversification has, especially in Sweden, resulted in the creation of courses of study with a pronounced user-adapted structure.

It was also pointed out that the Swedish university system has begun to play an ever increasing role in the expanding adult education. This raises questions about who is to get education and what education will be given. These questions are important for the future role of the universities since for many adults the choice is between taking a course in e.g. social science at secondary level or studying the same subject at university level.

Thus the horizontal diversification is also a symptom of a vertical diversification that has a decisive influence on the future role of the universities as supporters and producers of top researchers and the so-called "high culture". The former issue was actualized by an informal hearing of two Swedish professors with recent personal experiences of what in their opinion turned out to be growing difficulties in preserving research activities as well as research training. The second issue was raised in connection with the weakened position of the humanities as regards the number of younger students planning to make an academic career in their field of study. An increasing proportion of the students in the humanities consists of middle-aged people who very often follow the courses on a "hobby" basis.

With the assumption that this development continues and seen in a longer time perspective, great problems can be foreseen in preserving a high competence level in several subjects.

B The "private life" of the universities

A number of reforms on the Swedish labour market during recent years have had specific effects on the inner life of the universities.

Potential tensions have emerged, e.g. between the traditional "philosophy" of excellence" and the endeavour to create security for the employed. Several researchers, among them two professors who were invited to a hearing in the group, witnessed about the difficulties to create continously functioning research groups primarily because of the paralysing employment bureaucracy. One of them had even gone as far as to leave his chair in order to be able to do research work.

To a large extent the impact of the employment legislation is due to the fact that in Sweden a large proportion of the resources for research is annually distributed as grants for research projects while only a minor part is tied up by permanent positions as researchers. The responsibility for their co-workers' future felt by project leaders forces many of them to behave tactically when formulating new research proposals so as to avoid being too far away from what is considered to be "the problem of the day" by the research-supporting authorities.

C The effects of higher education on the values and conceptions of the students

In many respects, university graduates have been seen to form a distinct sub-culture in society with several characteristics in common, such as language, economic and status position.

Spending commonly 3 - 6 years in a university eviroment undoubtly plays a decisive role in the transmission of the cultural standards of this societal stratum.

A year ago, two research projects were initiated with the aim of describing ideologial and cognitive changes in university students duing their study period. (One of the projects, carried out in Umeå, has concentrated on the ideological development, while the project carried out in Göteborg has concentrated on the cognitive development.) Students from four different academic career paths (medicine, technology, economics and psychology) are being interviewed at different stages of their education in a longitudinal study. The design of the projects makes comparisons on the indivitual level as well as inter-group comparisons possible.

One question that has, however, been paid little attention to in these projects concerns the consequences of the "incomplete" socialization of an ever increasing number of students who take part in part-time courses or enter higher education under the auspices of a recurrent strategy.

III ISSUES PERTAINING TO R & D-POLICY AS SUCH

A The liaison between researchers and policy-makers

This topic was discussed quite extensively, not the least for the reason that both categories of people were represented in the group. It was stated that an extension of, as well as an increased variation in, the contacts between administrators/decision-makers and researchers being a crucial phase in the research cycle in which close contacts between researchers and policy-makers were specially important.

Two different strategies in problem conceptions were identified and researchers and policy-makers were characterized as normally functioning in accordance with one of these. Thus, policy-makers were said to simplify or rather purify problems, while researchers generally tended to complicate problems. These two strategies in their turn reflect the different predicaments faced by the two categories. In order to avoid being restricted in their actions the policy-makers have to foresee a lot of factors and relationships, while the researchers have to prevent criticism based on science-internal criteria.

A question that seems to deserve increased attention is the relationship between the nature of problems faced by policy-makers and the structure of a scientific discipline. In the field of education, not the least, this has been actualized by the urgent need for knowledge in problem areas that have no earlier history in a specific discipline. In order not to be left outside the stream of resources many researchers, however, strain their paradigms (or theoretical perspectives) so as to fit into the pattern of highest priority hinted at by policy-makers. This tendency is a treat against the stringency and "scientific reputation" of many disciplines. A serious discussion between policy-makers and researchers from different areas about what is possible to achieve in different disciplines at the present stage as concerns methods, theories, etc, is therefore of the outmost importance.

Criticism, internal as well as external, is the sine qua non of every scientific discipline. During recent decades in particular the internal criticism would seem to have decreased. If these observations are representative they herald a very dangerous development that has to be explained and halted.

B The need for case studies

In the history of Swedish educational planning and reform work, resources have been traditionally allocated for a scientific study of various experiments that have generally been carried out before a full-scale implementation of the reforms has started. There is also, however, a need for case studies of the role of research results in planning and policy-setting in the eduational system.

C Generation of negative evidence

A question of great importance for the research policy is whether research primarily is to be regarded as a tool for facilitating the realization of decisions taken by the authorities for whether research in the first place should have a critical function.

Sweden has by tradition applied a model of consensus whether it be in the relationship between employee or politician and administrator. The relationship between researchers and planners may not lend itself to such a simplified characterization, but, generally, research has had the function of providing a basis for decision making rather than criticizing the policy.

It was stated that generation of negative evidence was necessary to promote and two concrete proposals were given:

1 In controversial issues more than one research project should be commissioned.

2 The founding of independent periodicals as forums for critical studies.

REPORT FROM DISCUSSION GROUP
GROUP 4 — rapporteur Kjell Rubenson

1. STARTING-POINT

The group's discussions were guided to a great extent by the model of the interplay of higher education and society presented below. The model can be seen as the group's attempt to construct a framework for the subsequent discussion on the basis of the approaches and themes in the background papers.

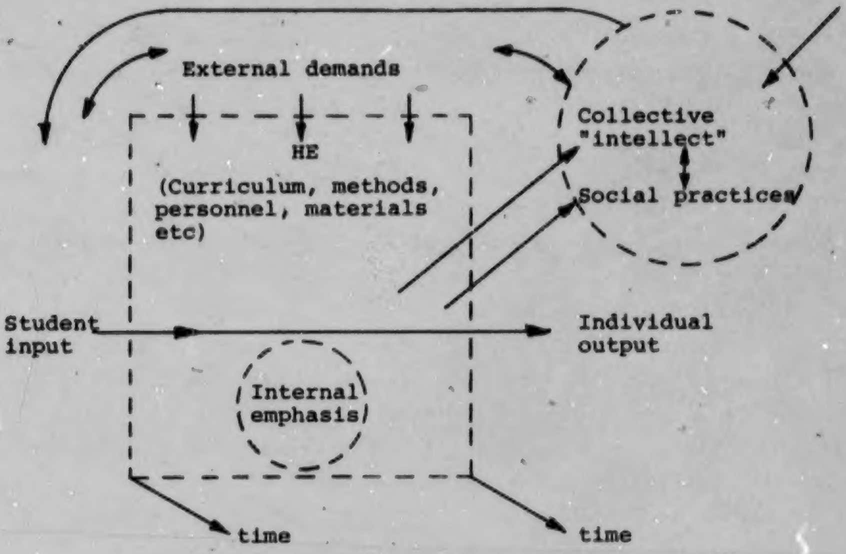

Figure 1. Analytical model of the interplay of higher education and society.

Higher education is determined by external demands, factors related to student input and (its) internal emphasis. The system of higher education today does not function in a historical vacuum; it has also been shaped by earlier traditions within university life. The arrows labelled time in the model aim at giving a three-dimonsional picture and show the system's movement in time. The production of higher education is usually measured in the knowledge cognitive skills and patterns of values, which the individual student displays (individual output). In the model, however, attention is also paid to another aspect: the knowledge which is generated in the system of higher education (principally through research) and which influences the individual's cognitions and images of his social reality directly. In the model this function is illustrated by the concepts 'collective intellect' and 'social practices'. Later in this presentation we will return to these concepts and describe them in more detail. It is evident from the figure that the different groups of variables interact to some extent.

The model in figure 1 does not claim to be exhaustive. The immediate objectives have been to obtain a starting-point for an analysis of R&D based on the role of higher education in society and to systematize current activities in the context of this. The projects included in the UHÄ's research programme for the fiscal year 78/79 under the present heading are aimed at charting how studies in higher education structure and shape students' values and conceptions seen in relation to the demands expressed for certain special professions. Some of these projects can thus be said to be centred within higher education along the student line and with some links to output and external demands. Martin Trow's paper is also centered along the student line but this part of the conference deals with the relation between student input and work/activity within the higher education system.

2. R&D - SOME GENERAL REFLECTIONS

R&D can be said to have three functions:

- technological - as a support for material production
- administrative - it creates the foundations for the construction of organizations and for routines within them, e.g. the education system's structure and special functions
- ideological - it supplies results which affect conceptual values concerning different phenomena (cf. collective intellect in the model).

The growth of educational research has been closely linked with the major educational reforms during the postwar period and can therefore be said to have had an administrative function in this context, i.e. how the system should be constructed, which has been coupled with an ideological view. Discussions concerning the relation between sectoral research and autonomous basic and applied research often end up in blind-alleys in which the debate is dominated by narrow special pleading and by a general suspiciousness of other groups' intentions and point of departures.

The group started from the model and the functions of research. The relation between a free and a tied sector ought to be seen in the light of the structural changes which have taken place within higher education and of the need for knowledge which the reform work of the future brings to the fore. When sectoral research develops it does so - as has already been mentioned - in order to solve certain problems concerning how teaching should be organized in the future. At that time the internal structure of the universities is stable and there is no great tension between the two main functions of higher education: the generation of knowledge (research) and the transmission of knowledge (teaching). Today the picture is different owing to changes in the student population among other reasons. First the system has developed from 'elite' to 'mass', the proportion of a year group going on to higher education has become larger and larger and second the number of adult students has increased sharply. The latter is partly a consequence of the increased importance of higher education as an institution for further education and training. This has disturbed the relation between the generation of knowledge and the transmission of knowledge and has also resulted in a stricter division of labour among staff in higher education. Irrespective of the rumblings which have emanated from certain parts of the old university there may be reasons for considering the need for a free sector on the basis of higher education´s altered structures.

According to the group the UHÄ´s research programme is of impressive breadth. However the question is how the different parts can be integrated and comprehensive problems such as the role of higher education in society attacked from different starting-points without losing sight of the totality. It is not enough to talk loosely about inter-disciplinary research. How should the problem-formulating phase be designed and how can it be grounded in a more deep-going policy analysis? In this context the group touched on the need for some kind of think tank changed with analyzing future needs in the light of alternative trends of development and also with trying to point to unpredictable developments occasioned by goal and interest conflicts within the system among other factors. More deep-going analyses of this type would provide a basis on which to allocate priority to and integrate individual projects.

3. EXAMPLES OF RESEARCH AND DEVELOPMENT PROJECTS

In our work we did not define specific research projects more closely. Instead we dealt with some broader areas and touched on the consequences these could have for the future R&D concerning the role of higher education in society. Influenced by one of our more distinguished representatives for the cognitive school, the group considered that to separate out concrete problems at too early a stage would be restrictive.

The situation in higher education today - how is higher education utilized?

In his contribution to the conference Martin Trow treats the development of higher education on the basis of the elite - mass - universal access model. The phases of development are determined by the proportion of a year group going on to higher education. According to Trow's classification the Swedish system has gone over from elite to mass as recruitment exceeds 15 % of a year group. The proportion of an age group going on to higher education can be a relevant criterion in trying to establish a starting-point for an analysis of the development which took place in Swedish higher education from 1950 to the end of the sixties. It is, however, too insensitive a measure for the structural transformation connected with the increased proportion of adults in higher education. In the academic year 1964/65 only 11 % of new students were 25 or over. Today the proportion of adult students among new enrolments is about 40 %. This figure does not take account of all the graduates who return to higher education and who are not counted as new enrolments. So the development in Sweden today does not correspond entirely to Trow's term mass system. On the contrary it would be better to regard it as a diffused system. In view of the picture we painted of the changes the group raised such questions as: who actually participates in higher education today and why? It is well-nigh impossible to carry out long-term projects concerning the role of higher education in society adequately without being clear about this. Previously there was often a clear relation between education and employment; now this relation has disappeared to a great extent. Consequently the socializing role of higher education is put in another light and research design is made more complicated. Previously such issues as students' motives were relatively uninteresting as most students were aiming at a full degree as a stage in their vocational preparations. Today the situation is completely different. People participate in higher education in order to acquire further education or training and for more personal reasons too. In addition the universities have in some instances adopted a role resembling that of Swedish labour market training. As far as motives are concerned the situation within higher education has increasingly come to resemble that within adult education.

The growth of recurrent education can be taken as an example of paradigm change within educational planning; that sets the question of the role of higher education in society in a new light and means in consequence, that old problems must be tackled from other perspectives. Take the process of vocational choice as an example. Earlier research seems to have started with tacit assumptions of a linear life-pattern, i.e. education in youth followed by a long period of gainful employment rounded ending off with a pension. Recurrent education is related to a view of a more cyclical life-pattern.

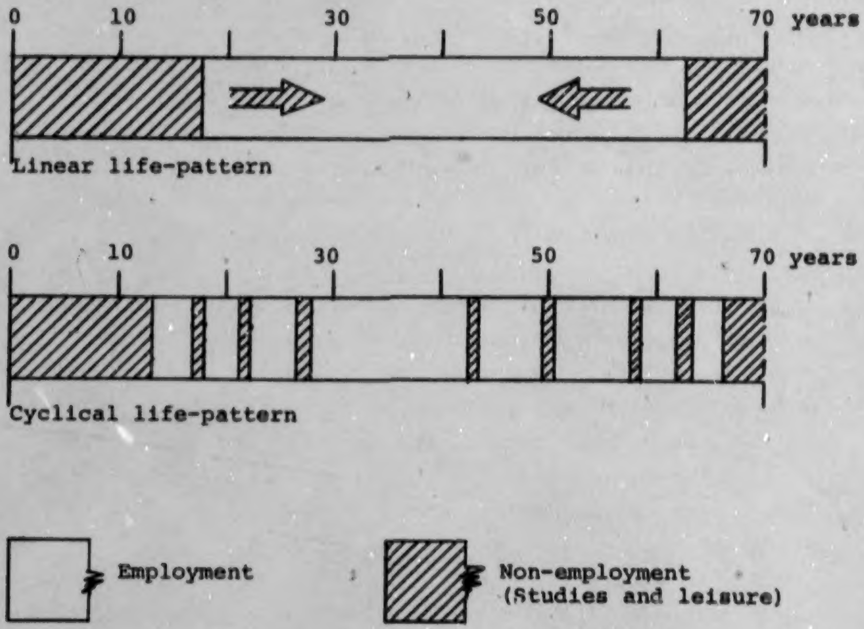

Figure 2. Alternative life-patterns in the future.

The cyclical model brings to the fore issues concerning the structure of career-cycles and vocational choice in a longer-term perspective just as recurrent education does. The same thing applies to qualifications structures. There a cyclical life-pattern focuses a greater degree of attention on the vertical and horizontal interchangeability of different jobs and the consequences this has for higher education. In the light of discussions of this kind the group raises the question of whether a part of the present-day research into higher education really is based on the circumstances which actually prevail assumptions about the prevailing situation. In view of the uncertainty which was felt on this point, descriptive surveys - who uses universities and for what, for instance - were sought as a foundation for more long-term research.

One consequence of the changes in the concept of higher ecucation is that it is getting more and more difficult to establish which part of the education system a particular group of people really belongs to. It is possible to take part in, for instance, local authority higher education and higher education at (one and) the same time. There is a risk that such issues as the charting of student flows fall between three stools - namely SÖ (The National Board of Education), SCB (The Central Bureau of Statistics) and UHÄ (The National Board of Universities and Colleges). Thus there are reasons for trying to apply a more coherent perspective.

The internal work of higher education and its relation to the society outside

How do different groups of students, the teaching staff, social and economic institutions and the public perceive higher education? Discussions of these issues started from the matrix below which was taken from Yrjö-Paavo Häyrynens paper to the conference (p. 17).

The matrix constitutes a starting point for the classification of different interest groups´ attitude to the internal work of higher education, e.g. research oriented teaching and the relation between study programmes and SOCIETY? The matrix can also be taken as the basis for an analysis of what direction Swedish higher education is moving in and of the connections which exist between the internal work of higher education and changes and demands in SOCIETY? For instance, how do different groups influence the curriculum and with reference to this what goal conflicts exist between a student-oriented and a society-oriented point of departure for the interpretation of students´ needs? Take project-centred education, can it under certain circumstances have a strong emphasis on quality and be linked to external demands at the same time (cf. Häyrynens matrix).

EMPHASIS ON INTERNAL QUALITY-CREATIVITY

		Low	High
CONNECTION WITH EXTERNAL DEMANDS OR REACTION TO ENVIRONMENT	Strong	Technocratic educational-technological, producing qualifications, organizationally regulated	Polytechnical-democra- project-centred, decentralized administration, autonomy, unity of research, teaching, practice, and personality goals
	Weak	Mass-university goal anomie, uncertainty of motives, low standard of results	Neo-classical, old academic model, culture university, critical, negation of social pressures

Attention in the group was, however, called to the fact that the matrix does in certain respects e.g. polytechnics partly describe an ideal state. Thus project-centred education may come to concentrate on the students´ own situation and may not be linked to a potential vocational situation.

A special issue which was dealt with under the present theme was overeducation, or underemployment as it really ought to be called, and its consequences for recruitment and for the students´ commitment to and feeling for their studies. Their are varying opinions about the occurence of underemployment and its consequences for the individual and the education system as well as for working life and society as a whole. The concerned with educational policy-workers often take the relatively optimistic view that well-educated persons in unqualified jobs tend to restructure them so that they become more demanding. There are, however, others who assert that job-content has not been altered to any great extent. According to this view underemployment leads to serious problems in working life and also indirectly accents a negative influence on students´ attitudes to their studies. Here it is a question of isolated bits of knowledge from different fields which would have to be given more depth and set in relation to one another.

The discussions concerning the link between internal work and external circumstances touched on the "Bridge-Head-Model" which Ulf Himmelstrand presented at the conference. Himmelstrand deals only with the link between research and life outside of the institutions. In the course of the group´s work it was, however, pointed out that the model would also be an interesting starting-point concerning teaching, not least further education, and that there were reasons for examining the model on this basis too.

Higher education, collective intellect and social practices

When the effects of research are discussed one often neglects the influence it generally has on how people think and interpret their surroundings. Darwin´s Theory of Evolution and Copernicus´ proof that the earth moves round the sun can be taken as examples to illustrate how research results can force through changes and influence the commonly accepted view of the world. The importance of higher education for society should also be seen from this collective point of view.

Bengt Gesser raised a related question, the institutionalization of social practices through education. Education, in this case higher education, is not just concerned with sorting and providing credentials. Higher education also contributes to the rise of new roles in society and to the definition of relevant knowledge (in the broad sense) for different areas of activity. A trend towards preventive medicine in the training of doctors does not just mean that the doctor-to-be can acquire new qualifications, it also means new roles and new areas of activity. In addition even the healthy individual will come under preventive medical supervision. To act rationally he should pay attention to "six slices of bread a day". A similar example is preventive dental care and the education of dental hygienists.

The formal education system has direct social effects through the contributions it makes to the social definition of different fields of knowledge in society. If we distinguish between individual and non-individual educational effects it may be that a new field for empirical educational research in Sweden will come into view. For example: How did the education of social (care) workers come to be defined as higher education? Who defined the knowledge the education of social workers ought to pass on and how did this take place? How has the educational content changed and why?

This way of looking at education means that a formal education is seen as being linked with a certain social practice. Previously this practice comprised an entity in some sense. Different theoretical statements are filtered out of this entity (using different measures) and these are defined as the prerequisites for a certain social practice.

There was considerable agreement in the group about the importance of complementing the research into the role of higher education which has been carried out up to now with research into the kind of question which has been dealt with here.

IV R & D ORGANISATION AND PLANNING

INTERACTIONS BETWEEN PRACTITIONERS AND SOCIAL SCIENTISTS IN RESEARCH AND DEVELP DEVELOPMENT

by Edmund Dahlström

1. Introduction *)

The following essay is of a highly explorative character, having materialized in the middle of a project and before the theoretical or empirical analysis has been completed. It focusses on the process of interaction between practitioners and social scientists in the process of cognitive development entailed by sectorial R&D **). Three sectors have been chosen for study, viz consumer research, research into working life and research into higher education.

First of all this essay deals with a number of general viewpoints concerning the relationship between practitioners and social scientists (section 2). The following sector (section 3) deals with higher education, a sector in which the writer has been both practitioner and researcher. The essay concludes (section 4) with a discussion of a theme of research organization, namely centre and periphery in cognitive development, with particular reference to the study of working life policy and research.

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*) This project is being undertaken in collaboration with Esbjörn Johansson, who has so far concentrated on a general analysis of the practitioner-researcher relationship, referred to below, and also made an empirical study of consumer policies and consumer research. The present writer has compiled working material on policy concerning working life and on research into working life, fragments of which have been included in the final section.

**) Cognitive development is used in a broad sociology of knowledge meaning referring to processes of knowledge development on a collective level.

2. General observations concerning practitioners and researchers

One of the fundamental concepts used in the project, that of the practitioner, needs to be developed in order to analyse the role of the practitioner in cognitive development. Actions and efforts to bring about change are founded on knowledge, and practical organizations can therefore be viewed as composed of systems for the development of knowledge and systems for the use of knowledge. (1) In an organization of practitioners (referred to in the following as a *sectoral organization*), every office or department combines, in various proportions, functions relating to the development of knowledge and functions relating to the utilization of knowledge.

The term *development of knowledge* (or cognitive development) as used here denotes a rational form of cognitive development: the systematic collection and synthesization of experience, the systematic elucidation and analysis of means and ends, the framing of strategy and action programmes, and the evaluation of action programmes. The development of knowledge is guided by action goals and action programmes. It is this control in terms of goals or actions that distinguishes practical or steered (directed) development of knowledge from scientific or non-steered cognitive development. The underlying supposition is that scientific development is moved more by general curiosity to elucidate natural and social relationships. Scientific development has a broader and more generalized focus, it devotes more importance to systematic thoroughness and a critical approach, and it is concerned for the openness and autonomy of its production of knowledge.

Steering is a concept whose ambiguity should not be overlooked. Firstly it refers to the focusing of research on practical goals. Scientific institutions pursue a great deal of autonomous research on these lines, e.g. economic research, the central models of which can be said to incorporate political aims such as full employment, stability of prices and economic growth. Secondly, steering can refer to the control of research by practitioners acting through their decision-making bodies.

The difficult problem now arises of distinguishing between research and cognitive development of a more practical nature. The term research and development (R&D) has been introduced to cover the entire cognitive and action process, including elements of action and implementation. The latter, more practical aspect denotes developments, thus regarded as an implementation of the knowledge accruing from research. Underlying it is a model from the natural sciences concerning linear dissemination from basic research via applied research to the development of products and production processes, possibly with marketing also included. Technical research and medicine can be viewed as fields of scientific implementation. Thus research forms an opposite pole to this more practically oriented type of cognitive development, where words and actions are close together.

Today there would seem to be a sliding scale of meaning where "research" is concerned. At one end we have a narrow sense of a more exclusive cognitive development occurring at scientific institutions. At the other end we have a broad sense of what may be roughly termed "social research" which occurs in practically all exploratory cognitive development. The composite term R&D employs "research" in an intermediate sense, but the meaning of the word is never made clear, owing to the vagueness of the development concept. Distinguishing features have been suggested such as the development of new knowledge, adherence - in procedure and methods - to scientific rules, and the public availability of activities and results.

The Research Council Committee has defined sectorally based research as being aimed at providing knowledge on which to base the definition of goals within a sector of society, as identifying and analysing ways to achieve those goals, and as developing the methods and instruments required in order to do so. (2)

Sectoral research, then, is the same thing as goal-steered research, and sectoral organizations are characterized by a focus on goals. Now the concept of goals refers to phenomena at different levels. We have overriding goals which can be said to constitute the ultimate purposes of the organization. These goals are then defined in more compartmentalized components, in an analysis of means and ends which makes allowance for paths of action and their viability. It is customary to speak in terms of strategic aims. On a more concrete level we have targets, that is, specified goals for our efforts. The formulation of overriding aims and strategic aims is adequately summed up by the term policy. The formulation of tactical aims, operational aims and programmes can be included among the more "policy-shaping" aspects of the organization's activities. (3) Decision making and implementation are the concrete portion. Action is then succeeded by a follow-up and evaluation of its consequences. Policy shaping and evaluation incorporate cognitive development, and this is where scientific research comes in. (4) Steered scientific research has devoted a great deal of effort and attention to the analysis of means and ends and has developed models for means and ends analysis in various sectors, the best known of these being economic efficiency analysis, which employs such methods as cost-benefit analysis.

The analysis of individual sectoral organizations indicates various impediments to its cognitive development on the practitioner side. Many such impediments have been described by Peter Stevrin. (5) They can relate to a generally unsatisfactory state of knowledge or to the uneven distribution of such knowledge among the officials staffing the organization. The structure of an organization can impede the development of knowledge if it has an extremely hierarchic and rigid structure of decision-making and command. Leadership may be unduly defensive and preoccupied with short-term problems, so that cognitive development tends to become short-sighted and to justify established policy. Excessive uncertainty can produce insufficiently long-range investment in cognitive development. There may be conflicts and contary views within the organization which constrict a certain cognitive development. There may be an allocation of power between professions whereby the profession in power impedes cognitive development within the domain of another profession - e.g. scientific professions such as medicine or technology on the one hand and social sciences on the other.

Viewing efforts at cognitive development from the vantage point of the practitioner, we also find impediments on the research side implying that the practitioner has limited opportunities of control in relation to the researchers. Referring once again to Peter Stevrin:

- The direction and design of research projects are to a great extent determined by the researchers, i.e. in many situations the initiative behind a research assignment comes from the researchers themselves.
- The lack of sufficiently concrete sectoral goals and systematic sectoral planning aggravates the difficulty involved in giving R&D a focus whereby it can yield knowledge for the definition of aims and planning and can contribute towards the attainment of goals.
- Sectoral research aimed at the definition of goals and planning is often of an inter- and multidisciplinary character and in many cases demands qualifications which the bodies responsible for the research may find it difficult to measure up to.

The established practitioners' experience of means and ends yields visions of desirable states and the deviation of experienced reality from these visions provides the foundation of problem perception and research inquiries. Problem perception can be made to shed better light on present reality, on the mechanics of reality, on the desirability and attainability of the predefined objectives, and so on. Theories concerning processes of change and the relationship between ends and means form the basis of action programmes and practical measures which need to be evaluated and tested both exante and post facto. I have been referring here to sectoral organization in a general and vague sense. In a broader perspective, one can distinguish in the society one R&D system in which we have a host of bodies and organizations acting and developing knowledge; in relation to these bodies and organizations the special scientific institutions have several functions concerned with the development, dissemination and assimilation of knowledge. The question of cognitive development on the societal level concerns Parliament, Government, ministries and administrative agencies, regional and local authorities, political parties, pressure groups, voluntary and other cultural organizations, mass communications and so on. The Research Council Committee has attempted to summarize, analyse and discuss this national R&D system and to propose changes which might be said to promote R&D activities.(6)

A general analysis of this kind leads to quite schematic recommendations - for parties, Parliament, the Government, ministries and administrative agencies etc to strengthen their R&D resources in various ways, for sectoral research to be more closely geared to a responsible authority, for clearer principles to be developed for the total fabric of R&D activities, for co-ordination to be achieved so that inter-sectoral matters are covered, for example, by initiatives from the Co-ordinating Board of the Swedish Research Councils, for information on research findings and research activities to be more efficiently collated and disseminated etc, for trade unions in particular to be given better opportunities of initiating research, and so on.

The social scientist's cognitive development is in many ways dependent on the cognitive development of sectoral organizations. Public and private bodies produce statistics for practical purposes, and the researcher is directly dependent on this information in his analysis of society. The practitioners are part of the scene with which social research is concerned, and their co-operation is often necessary in order for information to be obtainable. The social sciences are based on the researcher's own cultural participation with a view to understanding and description. In a manner of speaking the researcher is an active part of the field he studies. This generates a host of problems which I will not go into any further here, except to emphasize that social scientists and practitioners form part of the same historical process and are involved in a total societal process of cognitive development in a form of interdependence.

Efforts are made by sectoral organizations to mobilize research for their own ends and to control this development of knowledge. Large practitioner organizations - e.g. public sectoral bodies - follow strategies to mobilize scientific research in support of their efforts and methods, to control this development of knowledge.

The Research Council Committee outlines the following strategies in connection with an analysis by Peter Stevrin. (7) Organizational strategy implies that sectoral organizations endeavour by various means to institutionalize research, either through special free-standing institutes or by establishing quasi-institutional conditions at universities and colleges. Anchorage strategy implies that the sectoral body conducts outreach activities to elicit interest within higher education areas in the inception of research in the field and the formulation of projects in the field. Project model strategy implies that the sectoral body acts as the recipient of applications but the initiative rests with the researchers. Programme model strategy implies that the sectoral body draws up a research programme within which researchers can put forward draft projects which are then given financial support by the sectoral body. All of these strategies give the sectoral body the last word concerning priorities in the direction of research.

The steering of scientific research by practitioners has been a central theme of the debate on research policy. There has been a general consensus to the effect that basic, university research must in principle be autonomous. The very term "non steered" implies as much. It has also been agreed that sectoral bodies must steer sectoral research in important the use of their general respects and here again the term "steered" implies as much.

In discussions concerning the control of sectoral research, a distinction has been made between three levels. (8) The overriding level is concerned with long-term national priorities relating to the direction, scale, organization and finance of research as determined by Parliament, Government and ministries and administrative agencies specially responsible for research questions. The research planning level is concerned with the allocation of R&D programmes and projects and with the forms of research activities within the sector, and it involves a multiplicity of actors sucn as authorities responsible for R&D, research councils and funds distributing grants and determining priorities, and universities and colleges. The implementation level is concerned with the implementation of individual programmes and projects in which the bodies conducting research play an important part side by side with higher education authorities and the R&D authorities of the sectoral bodies.

To underline the practitioner control of sectoral research, a distinction is drawn between research-controlling or research-determining bodies and, on the other hand, active research bodies. (9) The power of the research-controlling bodies is predominantly located on the two higher planes, while active research bodies are conceived of as influencing matters at the lower level.

Researchers in the active research body are supposed to be professionally responsible for a number of decisions concerning research procedure. The influence exerted by practitioners is supposed to be more concerned with the direction of research and also with the forms whereby research findings are presented and disseminated, while researchers are responsible for the choice of methods ant theory and for the practical conduct of research. Thus a certain scientific autonomy is presumed to exist even within the framework of sectoral research.

The above presentation of sectoral goal-oriented research suffers from a certain abstarct one-sidedness, due to its employment of a fairly simple theoretical model of organization and decision making. There are given goals, and they are conceived of as abstract, unhistorical and superhuman entities. In reality we are faced with a historical process in which institutions-organizations are established in politico-economic contexts featuring conflicts between parties, movements, classes and other group formations, and in which the given objectives are vooted in historical, ideological, class-bound and human phenomens. The aims of the sectoral body are expressions of the ideas and values of the established practitioners.

The historical aspect of policy changes has an important bearing on an assessment of the importance of research in the policy of the established practitioners. The practitioners live in a changing environment which is constantly demanding revisions of basic ideas and values. This also applies to the social sciences.

Viewed in a wider context, both sectoral and scientific institutions are included in a process of change involving cognitive development and are influenced by wide-ranging material and ideological changes. The history of science shows us how values and ideas have been transformed in various fields of research. The individual sciences operate against the background of these institutional fields. (10) The same goes for political and sectoral bodies.

One researcher has recently pointed out the similarity of cognitive development in the sciences and in political institutions. (11) During a certain period there may be great unanimity concerning fundamental assumptions and values, and cognitive development may focus on more limited points, there is no great need for additional fundamental knowledge. Then come periods of crisis when there is disagreement concerning rival approaches and when the development of knowledge concentrates more on fundamental problems. Examples of this can be quoted from various sectors, e.g. social policy. Evidence of this type of development is apparent in the field of labour policy, which during the present decade has departed from "scientific management" and adopted a "sociotechnical" view of work. (12)

If objectives are viewed in this historical, "relationist" perspective, attention will focus on the broader context of political endeavour, the interests of pressure groups, the practical situation and aspirations of the established practitioners, and the structural changes undergone by outward conditions. The policy pursued by the established practitioners and the goal definition headings included in predefined programmes are by no means self-evident or lucid. This is where the function of critical scrutiny comes in.

There often exist a certain state of tension between more open-ended research which desires to challenge a major sector of the field of knowledge and established practitioners who wish to focus research on a more limited and delineated portion of the field where a larger proportion of the current policy is accepted a priori. (13) Scientific research leans in favour of a more general analysis which also includes parts of the active framework of the practitioners. The theoretical perspective of the researcher will not allow itself to be restricted by the desire of the established practitioners for more specific knowledge.

The chronological perspective is a frequently attested and elucidated aspect of the tension existing between established practitioners and researchers. The established practitioners are often under pressure to act quickly, and they demand fast research findings, while the scientific researchers need a wider perspective and time for a more thorough exploration. This again is a partial truth. In certain situations the practitioner may need a thorough review, and in certain situation the researcher, with an eye to his future career, may be anxious to obtain rapid results and thereby gain academic qualifications.

The Research Council Committee and others have employed the terms social significance (social relevance) and intradisciplinary significance in an attempt to elucidate the respective attitudes of practitioners and social scientists to knowledge. (14) Social relevance emanates from the practitioners' assessment of the relevance of knowledge to policy and politics. Social significance is a broader concept. Knowledge may be socially significance but be ascribed less value because of the ethical and political priorities of the practitioners. Research findings may be significant, for example concerning methods of manipulating consumers, but they may be ascribed a negative politico-ethical value and therefore denied a high degree of social relevance. Thus social relevance refers to the social consequences of utilizing a certain body of knowledge and to the valuation of the desirability of those consequences.

Scientific significance refers to the probable effect of knowledge on scientific development. As we shall see in the next section, this assessment hinges on interpretations and values within the scientific community concerning which opinions may differ. This applies not least to the social sciences.

Reference to social relevance involves the same danger as the argument concerning goals and goal achievement, namely the danger of seeing a simple and unambiguous entity without any historical, political and ideological foundations. The distinction made by the Research Council Committee between social significance and social relevance provides food for thought in that it refers directly to the order of priorities determined by an authority. When the Research Council Committee writes in its report on research policy that research can and should serve as a means of attaining "the goals which society sets itself in different fields", it indulges in a dangerous metaphor. (15) The goals are not set by society but by politicians, officials and other practitioners in a concrete political situation.

There is an important point to the conceptual distinction between social significance and scientific significance (16), namely that it leaves the relationship between these two values an open question. It has sometimes been assumed that research or knowledge cannot be socially and scientifically significant at one and the same time. But this is clearly the case with many fields of knowledge, e.g. economics, the central theories of which are focussed on "action variables" as with stabilization theory and stabilization policy. The division into basic and applied research ceases to be tenable. Rather there is reason to divide interdisciplinary significant research (basic research) into research possessing social significance and research not possessing that significance, the point of departure being the assessment made by practitioners.

The social significance of knowledge is a precondition of its utilization. Studies of the use or implementation of knowledge from the social sciences have yielded depressing results. (17) It has been hard to demonstrate any direct use of social knowledge by practitioners. This has led to a great deal of discussion. One problem here may be that use has been invested with a meaning derived from the scientific, technical and medical application of knowledge, which has sometimes described a pattern of dissemination from centre to periphery, i.e. from the basic research done by universities "via" applied research "to" development work. Experimental studies have indicated a connection which practitioners have then been able to apply after a certain amount of development work. No such "linear dissemination of knowledge" has appeared in the sphere of the social sciences. Here instead there has been a complex interaction between local cognitive development and central cognitive development. Cognitive development at social level is based on everyday experiences and local conditions in a different manner from that applying within the natural sciences.

In the social sciences, the type of knowledge that can be wanted by practitioners is subject to variation. It may concern more concrete observation studies of the current situation of practitioners, historical studies of the practitioners' background, analytical studies of means and ends in the practical situation, critical analyses of ideas, fundamental concepts and values, micro research into the satisfaction of human needs, macro studies of social structure, and so on. These various types of knowledge are attained in various ways and have various kinds of social significance. An analysis of the utilization of knowledge requires a division into different types of knowledge, which is dealt with in greater detail below and was discussed in my preceding report (Social scientists and practitioners).

Social relevance means the value which established practitioners ascribe to the knowledge in question. In the preceding report, "Social scientists and practitioners", distinguished between practitioner relevance and practical relevance. (18) The former refers to the significance of knowledge in relation to the problems and alternative courses of action indicated by the practitioner, while the latter refers to the significance of knowledge in relation to "objectively" diagnosed social problems and spheres of action. The "objective" diagnosis presupposes that you start with a framework of values and ideas, establish problems and active strategies and then assess the significance of knowledge on this basis. Thus the "objective" diagnosis presupposes the adoption of a politico-ethical standpoint by the social scientist himself, starting with "commonly accepted" aims and values.

The above mentioned distinction points to fundamental problems affecting problem-oriented research in the social sciences and concerning the extent to which it is to accept implicitly the "definition of the situation and the problems" put forward by the practitioners concerned. The critical attitude of research is founded on the supposition that practitioners do not always possess statisfactory knowledge and that research often has reason to query their diagnosis of problems. Practitioners, of course, will not like being challenged on their statements of fundamental problems, and they will want to focus research on points which they believe to be in need of investigation. In the preceding research report I pointed to this as a type of fundamental conflict between social scientists and practitioners when negotiating on the design of problem-oriented research. (19) One large and important problem which I will skirt for the time being concerns the possibility of conflicts arising between different groups of practitioners with regard to their aims and strategies, the possibility of knowledge meaning different things to different categories and the possibility of knowledge having a bearing on group endeavours through its stimulation of awareness. This is the well-known problem of "knowledge for whom?" The project will have cause to analyse this problem in its concrete studies, above all as regards policy concerning working life.

If instead we start from the practitioners' angle, we can invert the above approach. Here I would refer to Esbjörn Johansson's analysis of the interaction between practitioners and researchers, which underlines the symmetry of problems of cognitive development in the situation of the practitioner and that of the researcher. I quote:

"One interesting question is the extent to which we can apply a parallel argument where the practitioner is concerned. For example, we could insert the pair "*research orientation*" and "*researcher orientation*". In doing so we have implied that the researcher, so to speak, is in the "research field" and steers his course towards practice/the practitioner, while the latter, correspondingly, is in the "practical field" and steers his course towards research/the researcher. This type of symmetry, however, suffers from the weakness that it may cause us to overlook an important aspect, namely the fact that, in a perspective of cognitive development, we are sometimes faced with a situation where the practitioner and the researcher focus *outwards* from their "internal" situation, i.e. towards something which in a sense is located outside the researcher's field of research and the practitioner's field of practice, and that each of them does so *via* his opposite number.

The orientation of the researcher and the practitioner *vis à vis* one another is only a portion of the total outward orientation of each party, viewed in the perspective of the internal situation. Moreover, the existence of this portion can be supremely transitory, for the primary orientation of the practitioner is above all dependent on the content of the social sector on which his activities focus, just as the social scientist is primarily oriented towards a field of reality which is connected one way or another with cognitive tradition and theoretical structure within his own discipline. Thus it is possible to be the carrier (with a greater or lesser awareness of being so) of an internally defined "social orientation", and in this perspective we can see that the most important motive forces behind the internal cognitive development requirements of the two sides is located in the intermediate stratum between internal situation and the relevant field of society or reality (in the sense intimated above). Orientation *vis à vis* the collaborating opposite number in the process of cognitive development can then be seen as being transmitted via this primary social orientation. In many cases, however, there is a certain intertwining: the content and research practices of many subjects in the social sciences reflect structural changes in society which, in a manner of speaking, have been communicated to the sciences via the cognitive development requirements of important practitioner groups, a process of communications which has been institutionalized to a greater or lesser degree with the passing of time. We thus obtain a situation dominated by *limitations of outlook and perspective*, i.e. limitations affecting what we see and how we see it. This state of affairs is illustrated by the following sketch.

RESEARCHERS (and practitioners)		PRACTITIONERS (and researchers)
disciplinary segmentation	limitations of outlook	sectoral segmentation
prevailing paradigm or school	limitations of perspective	dominant ideas and intolerance towards new approaches

The two types of segmentation can be established on both sides via the organization of cognitive development.

Institutionalized relations between practitioners and researchers can rigidify in such a way that the research orientation of the scientists is dominated by a particular sectoral segmentation and the practitioners, for their part, display disciplinary segmentation in their orientation towards external bodies or institutions engaged in cognitive development. The very occurrence of this situation generates problems in connection with the planning and control of research.

Both limitations of outlook and limitations of perspective present an organizational aspect and an individual aspect. The segmentation phenomenon can be primarily related to the organizational level, while the factors underlying limitations of perspective are more related to the individual level. Segmentation as a phenomenon can have both negative and positive effects. In cases where the segmentation of the practitioner and that of the researcher reinforce one another and rigidify in an institutionalized pattern, one's first impulse is to interpret this as something negative, but in the ultimate analysis this question has to be related to the cognitive needs of the community. Segmentation as a separate phenomenon on each side can mean that certain conceivable combinations of contacts and cognitive developments are impossible to realize, but it can also provide opportunities for processes of cognitive development of an transcending character. In the preceding study it was observed that the autonomous development of knowledge within scientific institutions could have the advantage of leading researchers to cross sectoral boundaries and criticize constraining elements in the ideas and policies of practitioners. At the same time practitioners can assemble researchers from different subjects and thus transcend the "false" boundaries which have been set up by one-sided school formations. This shows how limitations of outlook and perspective are interconnected and how the breaking down of one can have repercussions on the other. This type of transcendence, however, with its positive effects on cognitive development in the community, has not been institutionalized to any great extent."

3. R&D in higher education

I would now like to turn to sectoral research into matters of higher education, and here I shall try to illustrate some of the above mentioned relations between practitioners and social scientists. According to the view expressed above, the analysis must take the concrete historical process as its starting point. Because the study is in its infancy, the following approach will be very incomplete, not least as regards the analysis of the historical framework surrounding the process of interaction and change. This is purely a preliminary sketch, and I shall not include any references. Part of the sketch derives from my participation in the system as a practitioner (university teacher) and as a researcher (doing research on higher education).

A. The higher education system in general

The social subsystem or political system I am going to discuss here is higher education and research. This system is viewed analytically as comprising all the institutions which are vehicles of higher education and research. Since 1977 the National Board of Universities and Colleges (NBUC) has been the national authority in charge of all higher education except in the municipal and agricultural sectors.

I assume that the basic changes undergone by this subsystem during the post-war era are well known, and I shall content myself with pointing to a few strategic facts, namely the following.

A tremendous quantitative expansion, in terms for example of the resources applied to higher education and the numbers of persons involved in the system.

A tremendous qualitative differentiation, reflected by subject divisions, new subjects and a widening variety of appointments and institutions.

A transformation of the traditional university system towards more administrative and political control by Government and Parliament and a streamlining of education in keeping with the demands of the surrounding community. It is customary to refer to a change from cultivation (bildning) to qualification (utbildning). The reforms entitled UKAS and PUKAS can be taken as typical of this process, because they have limited students' options to certain combinations of studies focussing on particular occupational spheres and potential employers.

The reform of higher education adopted by the Riksdag (i.e. the Swedish Parliament) in 1977 was particularly aimed at putting all higher education under a single management, both nationally and locally, at gearing all higher education to research, at decentralizing certain managerial functions both locally and regionally, at broadening the basis of admissions to higher education (partly by means of recurrent education), at broadening the range of educational opportunities, and at linking education more closely with working life and occupations (partly by organizing basic studies in vocational fields and lines).

Democratization has been one of the aims of reforming activities. At the end of the sixties this meant above all giving students and certain employee categories a greater measure of influence; for example, there were experimental schemes of student representation. The reforms of the seventies have above all been aimed at increasing the influence exerted centrally and locally by "public interests" as represented by public authorities pressure groups and commerce and industry.

Emphasis has been placed on the promotion of creativity and training in critical thought as goals of education. Regional and social equality has been another aim, in pursuit of which geographical distribution of educational opportunities and research resources, wider admissions (partly on the strength of job experience) and recurrent education have been important instruments. The equality of the sexes is another objective which has been greatly emphasized in reform activities.

The post-war era has brought a heavy expansion of research. The establishment of research councils and the creation of general research foundations such as the Bank of Sweden Tercentenary Fund have played an important part in this connection. Sectoral research has expanded more dynamically in recent decades. Ministries and administrative agencies have set up R&D funds through which practitioners have controlled R&D activities. Most of the research involved by R&D has been done by university departments or other special research bodies.

The expansion of sectoral research has generated additional resources for research in the higher education sector, but at the same time it has caused certain difficulties. In order to be able to offer research of high quality, one must have a balance between more permanent research resources in the form of permanent research appointments (basic resources) and the more temporarily allocated resources channelled through sectoral R&D bodies. This has been pointed out in many survey reports.

These changes in the higher education system must of course be viewed in relation to general changes in the structure of society, the expansion and differentiation of enterprise and the public sector, and increasing demand for education, research and planning. Higher education performs certain functions in relation to the community at large by contributing to cognitive development and education. These contributions can be considered as preservative and transformatory in relation to the reproduction and alteration of current ideas, knowledge, qualifications, social stratification etc.

The manner in which these "functions" are diagnosed is closely bound up with one's fundamental view of society, its structure and its legitimacy. Those who particularly emphasize transcending aspects usually underline the legitimation by the higher education system of the status quo, and its reproduction of labour, production conditions and current class relationships, as evidenced for example by its sorting function. Assumptions of this kind often presuppose that higher education is fairly uniform in character and has unambiguous functions. There is a great deal to suggest that universities and colleges, as they have concretely and historically evolved during the post-war era, have been of a far more composite character and have made complex contributions to society at large which cannot be thus schematically viewed as clearly legitimating or reproductive.

One of the fundamental/organizational characteristics of higher education is the relative autonomy enjoyed by the local units in the development and dissemination of knowledge. The content of research is governed via learned professions. Local and professional autonomy can be viewed as an "anarchic element" in the organization of higher education, and it distinguishes higher education from other State activities. The reform of higher education was aimed at modifying educational organization both centrally and locally by granting more influence to practitioners of various kinds. It was not the intention to disrupt the basic organization of research and the fabric of professional responsibility. The various reforms have been justified in terms of basic studies, and less interest has been devoted to the organization of research. It can be said to constitute an important and partly open question whether the reform of higher education will affect research and its "anarchistic" premises.

B. Research into higher education

Research resources for studies of the higher education sector itself were established at the beginning of the 1970s. R&D comprises both research and development. Higher education R&D today (apart from personnel training) is divided into four sub-programmes:

Research projects
Follow-up of reforms
Sectoral projects
Local development work

The research program during the early seventies focussed primarily on pedagogical issues. Gradually the field of inquiry has been widened, so that it now includes fundamental issues of various kinds concerning higher education and involves researchers from various disciplines in the social sciences and humanities. This sub-programme is planned and administered in consultation with two advisory groups, one made up of researchers and the other of planners (vice chancellors and heads of division). Research into higher education covers four major problem areas: (1) the role of higher education in society, (2) higher education as a system: structure and control, (3) the environment and working methods of research, and (4) the environment and working methods of teaching. Some work has also started in a fifth area, concerning R&D organization and planning.

The programme of reform follow-up was begun in 1976 and is aimed at following up the reform of 1977. The following sub-areas have been distinguished for this purpose: (1) the organization of higher education, (2) the allocation system and the planning of activities, (3) the evaluation of activities in higher education, (4) the forms and content of education, and (5) the social effects of the reform of higher education.

The sectoral projects, which in their present form started in 1977, deal with current issues within the five sectors of vocational education (technical occupations, administrative-economic and social occupations, health and care occupations, education, and culture and communication/occupations). These projects are above all concerned with the development of new study programmes. Other general issues have also been raised, e.g. the relation of education to working life and its relation to research. The sectoral projects are administered and controlled through a cross-sectional group of NBUC officers coming primarily from the education and research divisions serving the five planning committees (one for each sector of vocational education) attached to the NBUC Directorate.

Local development work, which accounts for a major portion of the R&D allocation, is organized and controlled locally within the various higher education units with their special reference groups and educational development units.

C. Some problems occurring in the NBUC Rand D activities

Even a superficial glance at the R&D system will reveal a motley collection of practitioners and fields of knowledge. The practitioners mainly responsible for the passing of the reform of higher education are to be found in the Riksdag, ministries, party political organizations and pressure groups and the central administration, and the knowledge underlying the reform has concerned the actual and possible functions of universities in society for the furtherance of democracy, equality and parity of status, economic growth, greater efficiency and so on. These practitioners are primarily interested in knowledge concerning the implementation and evaluation of the reforms. The planning committees are also interested in these types of knowledge, with particular emphasis on sectoral education and research. Educational efficiency, relation to working life, relation to research, admissions etc, take on more importance here. The focus of knowledge within the regional boards and secretariats will be on the regional plane and will concern the co-ordination of the special education and research needs of higher education units and their regions. The seething activity of higher education units at local level demands resources above all for the development of education, working life relationships and research relationships, and it also demands resources for the assessment of local education and local forms of organization. All across the board training is needed for the people active within the system, together with information and communication on the subject of activities.

One interesting dimension concerns central versus local R&D activities. There is cause for a closer study of the implications of local developments in terms of cognitive development. Personnel training is perhaps more a question of the dissemination than of the development of knowledge. The question is whether a portion of local activities supported by R&D funds can be termed cognitive development. Often these funds serve to augment resources for development work, and the knowledge developed often goes unrecorded and therefore fails to become publicly available knowledge. At all events there is no question of research here if the term research be taken to emphasize a systematic approach to cognitive development, based on theoretical analysis and aimed at producing public and universally available documentation. Some local projects, however, can be rated interesting from a research viewpoint and could be amalgamated in a more systematic and general approach.

This question has been discussed by practitioners and researchers in the planning of R&D, for example. Criticism has been levelled at the failure to achieve any dissemination of the knowledge generated by local R&D. Nor is there any systematic co-ordination and integration of local and central cognitive development, despite the existence of congruencies of theme and despite the potential ability of locally and centrally generated knowledge to support one another. The NBUC R&D unit has taken the view that local R&D must be left to look after itself without any interference by the NBUC and consequently there is no close link-up between local development work and central R&D. An annual report of existing R&D projects (though not of their results) at central and local level is taken to be sufficient.

In 1977 a planning group for R&D in higher education was set up to supervise the balance between the various R&D sub-programmes mentioned above. This group, chaired by the head of the R&D unit and including two representatives of each of the five planning committees, has now embarked on a discussion of the arrangement of R&D. In the course of this discussion it has been qrgued among other things that the R&D unit has excessively based its R&D planning on a centre-periphery model, whereby research is assumed to be disseminated to local practitioners via implementation. There is hardly any evidence to support this thesis, but it raises interesting questions concerning the relationship between central research and local cognitive development. A great deal of the knowledge needed centrally has to be based on local knowledge, i.e. knowledge of local conditions. Many central research projects obtain knowledge from local sources of information, for example via interview surveys, studies of a sample of higher education units or the processing of available statistics. The question of central research and local development and the mutual relationship between these different types of knowledge and cognitive development could do with closer study so as to provide knowledge on which to base an improved R&D policy. Practitioners, both centrally and locally, could do with information, supplied in an integrated and easily assimilated form, concerning R&D results at different levels. This brings us onto an important field of R&D activities, concerning information and the dissemination of research findings. But the need for information is horizontal as well as vertical.

People locally need to know more about experience gained elsewhere at local level - for instance, concerning project-based instruction.

There are those among R&D planners who realize that the R&D situation is rather incoherent and that knowledge needs to be tied together centrally and locally with reference to certain themes. Integration has been started on such themes as recurrent education and the renewal of teaching and learning.

The R&D unit has so far had difficulty in getting practitioners interested in the direction and control of research. The formation of the above mentioned planning group for R&D in higher education represents one attempt to interest practitioners in R&D. As mentioned earlier, this newly established group covers the full range of R&D activities, sectoral projects, personnel training, the follow-up of reforms, the research program and local development work. The experience so far accruing from these activities suggests that it is hard to interest the planning committee representatives in the complex problems of R&D. The tendency is for the R&D unit to do a great deal of the thinking and draw most of the conclusions from the contributions received from the members of the planning group.

The question of the boundary between research and development has cropped up but has not been resolved in any great detail. Certain research has been criticized because the knowledge which it yields is too difficult to be used by practitioners, and forms of cognitive development have been called for which clearly deviate from research aspirations and are of greater importance to the development of activities, e.g. training and the development of practical skills in connection with experimental activities. The forms of quasi-research investigatory activities have also been challenged, i.e. the procedure whereby a project leader is appointed, collects material and then writes a report. Reports tend to disappear into desk drawers instead of having practical results. Other forms of dissemination - for instance, involving the closer integration of research and education - have been tried.

One frequently recurring topic of discussion concerns the possibilities of establishing a long-term, critical and socially relevant development of knowledge.

This problem has been viewed as a central and controversial point in the organization of sectoral research and the implementation of the sectoral principle, i.e. the close attachment of cognitive development to a responsible authority. The danger lies in the need of the responsible practitioners at the authority concerned to elucidate the conditions of more immediate practical significance, and in this practical significande being viewed in terms of the planning frame, practical situation and policy of the responsible authority.

Sometimes an effort has been made in Swedish reform activities to disconnect investigatory activities from the influence of a responsible authority so as to obtain a more critical and open-ended cognitive development concerning a question. Certain Government Commissions have been dominated by experts, officials and politicians from outside who have not been committed to the established policy of the authority concerned. The reform of higher education has to a certain extent been sustained by practitioners and experts outside the higher education system or at top civil servant level, and the reform has partly taken place in the teeth of resistance from important higher education groups, e.g. university teachers and students.

The question of principle then arises: if R&D is organized and controlled from inside the authority, how can it fertilize cognitive development among the controlling practitioners outside the NBUC, for example in the Riksdag, the Government, ministries and pressure groups? Previous educationally oriented research projects were not very much concerned with the problems which later played a crucial part in the adoption of standpoints regarding the reform of higher education. Perhaps the NBUC practitioners will give priority to the questions that are uppermost in the minds of central administrators, e.g. internal organization, educational processes, internal education etc, and will devote no attention to the outward relations of the higher education system, relations which may be crucial determinants of the standpoints adopted by politicians concerning the future of the higher education system. The report of the Research Council Committee includes a discussion concerning the relation of R&D to ministries or other public authorities (board-administrative agencies).

Within the NBUC, discussions have taken place concerning means of ensuring long-term and critical research. Since the beginning of the 1970s a small proportion of resources (about 10 per cent) has been set aside for the Research part of R&D, and projects within this sub-programme are selected by two advisory groups, one made up of researchers and the other of planners. Efforts are made, via conferences, seminars, publications etc, to establish R&D activities on a broad footing in various ways. Concerning the research portion of R&D, emphasis is laid on the importance of theoretical development and international contacts. This research is viewed as an element of permanent research and as part of the process of mobilizing researchers on questions concerning higher education. The main limitation, perhaps, lies in the selection of practitioners. Perhaps more efforts should be made to mobilize M.P.s, trade union officials and other people serving as experts on higher education and research in different sectors of the community.

A review of research projects in higher education R&D shows that, at least in terms of subject headings, they are consistently *related to questions of means and ends as defined by practitioners*: social recruitment in higher education, the relationship between education and the labour market, the effects of education on social and personal development, the utilization of research by practitioners, the organization of education, the efficacy of control and decision-making procedures, impediments to innovation in connection with university changes, the implementation of pre-defined goals in the reform of higher education, the results of research training, the research focus of education problems of interdisciplinary research, the value of different forms of instruction - critical training - and so on. At the same time as projects are defined in relation to the arguments of practitioners concerning means and ends, they tie in with accepted frames of scientific theory and have a clear fundamental scientific value.

There is frequent discussion of the *legitimating* or *critical* function of research. The above mentioned projects are all formulated in such broad terms that it must be considered quite an open question to what extent their results are critical or affirmative. They all leave scope for criticism of the system on various points.

D. Future research tasks

Analysis of the content of knowledge is important, and it is only via this type of analysis that one is able to discuss the question of the utilization and usefulness of knowledge in the efforts of practitioners to bring about change. It seems abundantly clear that the overwhelming proportion of cognitive development occurring in the NBUC R&D activities is inspired by the goals and efforts of practitioners. This is not to say that the products of cognitive development are always made use of practical situations change rapidly, and there is always an element of unpredictability regarding the outcome of a particular process of cognitive development. Here too there are problems of dissemination and communication. The cognitive problem of a practically oriented organization is partly concerned with the dissemination and assimilation of knowledge. This is the foundation of the effective functioning (i.e. goal achievement) of organizations.

The *typology of knowledge* which has been hinted earlier in this paper requires further development. The control and utilization of this knowledge by practitioners needs to be elucidated further. This would warrant a closer analysis of various demarcations, e.g. that between research and other cognitive development and that between cognitive development and other ways of developing the practitioner's situation (incorporated by the concept of R&D).

Viewed from the vantage point of *central planning*, special attention should be paid to the different cognitive interests attaching to *strategic* and *operational* planning. The cognitive interest of strategic planning must be concerned to a greater extent with the previously mentioned questions regarding the outward relations of higher education, the changes undergone by the world at large in terms of its need for education and research and alternative thinking and, consequently, critical thinking. The interest of operational planning should focus more on evaluative and recording activities built into current activities. Presumably activities of the latter kind require closer contact between planners and researchers.

The subsequent analysis will have to focus on the above mentioned local-central dimension of cognitive development. Here we must pay attention to the special characteristic of universities and colleges whereby they base their activities on local bodies and the professional control of cognitive development. The fact that the local units are also concerned with research tasks will influence their practical cognitive development in connection with education and administration. Here there are numerous potential sources of conflict between central streamlining efforts and local efforts to conduct research and safeguard cognitive traditions. Central demands for change can be interpreted locally as impediments to research and to the quality of instruction. The role which can be played in this connection by practitioners as representatives of the public interest is worth considering.

The higher education sector has internal and external research problems. In this essay I have mainly dwelt on the internal aspect, i.e. cognitive development regarding conditions within the system. But at the same time this system constitutes the foundation of all research in society, and there is an interaction between higher education as a research and education sector and other parts of society as sectors receiving research and education. The present study has been confined to two sectors apart from higher education itself, namely consumer policies and policy concerning working life.

We hope, however, that a further elucidation of the relationship between politics (in the broad sense) and research could furnish interesting documentation on which to base a discussion of the outward problems of research policy encountered by the NBUC. The report on research policy presented by the Research Council Committee includes six case studies of different sectors, two of which are partly connected with those we have selected (working life policy and consumer policies). Other material will also be used.

The sectors which have been chosen present different conditions regarding the interaction of researchers and practitioners. Working life is characterized by strong parties and a weak governmental authority. At the same time a line has been followed here which leads away from the customary sectoral principle of a controlling R&D body attached to a public authority and a higher education system containing research institutions. A special research institute has been established, the Centre of working life (industrial relations). The consumer sector is also characterized by conflicts between parties (consumers and producers) and by powerful representative organizations, but this sector has a more powerful authority in the National Board for Consumer Policies. This sector can therefore be termed more authority-dominated, at least in its present state of development, and it does not present such manifest conflicts between representative organizations and parties.

The Research Council Committee points to the great variation of research organization from one sector to another, and it counsels against the establishment of extensive uniformity in the organization of sectoral research. The Committee is fairly open to arrangements of various kinds, and it points to circumstances which can justify different forms fo R&D organization.

Here once again there is reason to observe different bodies and types of knowledge. Knowledge of the scientific. technical and medical variety has dominated the discussion for a long time and has been geared to the image of a centre-periphery model and a linear model of dissemination. Allow me, finally, to dwell on this sole theme of research policy analysis, which I believe to be vitally important to the whole discussion of cognitive development. I would like to refer here to the summary I have made in the working material concerning research and policy on working life.

4. Practitioners, researchers and centre-periphery

Research in working life in its more practically and actively oriented form has brought into focus a type of research vaguely and indistinctly referred to as action research. This term has had as many meanings as users. Often it has denoted locally based research where researchers co-operate with local practitioners in a process of change and help to analyse and - one way or another - evaluate the changes. Since power is vested in the local practitioners, the level of the researcher's activity will be restricted by the local power constellation. Two strategies have occurred in local cognitive development (see the report mentioned above) (21). Certain experiments are characterized by relatively active researchers who, in one sense or another, pursued changes in consultation with joint groups, naturally with the approval of the management. Other experiments appear to have allotted the central experts a more cautious role; these analyses have given more prominence to the local initiative behind the process of change and have played down the importance of central experts. It has also been vigorously emphasized that the question is one of development only, not research. The problems of action research raise an important question concerning the relationship between centre and periphery in cognitive development and concerning the relationship of research to other cognitive development.

Technical research has made the running in working life. Cognitive development concerning production methods and working procedures has been profoundly influenced by technical thought. Usually development work has been led by persons with technical training. It was not until comparatively recently that other research and knowledge were introduced into planning and thinking on the subject of development work. The complete predominance of scientific management until the beginning of the 1970s can be taken as an indicator of the paramountcy of technical thinking in the spheres of both research and development.

Scientific technical research has set a pattern for other research, and practitioners have often expected research in the social sciences to play a similar part. There is cause for a discussion as to what the patterns of cognitive development on the technical and scientific side look like compared with the corresponding patterns in the social sciences.

The technical-scientific side has often employed a centre-periphery model or a linear dissemination model of R&D. A channel emanates from the basic knowledge of basic research in the centre to applied research and on to development work, which is often thought of as occurring locally, i.e. on the periphery. This model has also been discussed with reference to technical research. (22) It seems to present even more of a problem where research in the social sciences is concerned.

If research in the natural sciences or technology shows that something or other can be manufactured by certain processes or that a given manufacturing process generates substances involving a certain degree of medical hazards, this knowledge is valid for local situations. Knowledge in the social sciences does not appear to be obtainable in the same way through specific laboratory studies at central level. For example, we cannot resort to experimental studies of patterns of leadership in order to identify patterns which automatically apply to the whole of working life in all its immense variety. Cognitive development demands a local study of conditions. A local instance cannot "set a pattern" and spread further until it has been tested ant yielded the desired results. Social science is founded on everyday knowledge and everyday conditions. These local conditions provide the basis on which more general knowledge is constructed. The cognitive model for social research is a periphery-centre-periphery model and is best viewed as an interactive model of dissemination.

In this way the production of knowledge in the social sciences is more closely bound up with everyday ideas and the dictates of common sense, and no hard and fast boundaries can be interposed between the two. This have often been pointed out in literature on methods and referred to as a difficulty besetting research in the social sciences, i.e. its being concerned with conditions of which ordinary people possess knowledge. For my own part I would maintain that knowledge of the social sciences often serves to supplement or correct what is shown by proven experience, rather than presenting something new or of a different kind.

Of course, social science aims for generalized knowledge, but research traditions and research fields differ in the value they ascribe to local studies. There is research which heavily underlines the importance of local relations to an understanding of society.

The local perspective is often of most immediate concern to practitioners. If local conditions point in favour of a solution, this is sufficient to justify backing that solution in practical terms. The question of the general validity of a solution becomes a secondary point which is more of interest to other practitioners in other local circumstances. Researchers take an interest in general validity, and this gives them an important part in the dissemination process. Local studies cannot be ignored when dealing with cognitive development in the social sciences.

The difference between researcher and practitioner hinted at here in terms of their preferences for general and local knowledge respectively is commonly acknowledged and attested. The researcher is abstract and theoretical while the practitioner is concrete and concerned with facts. But there are other dimensions involved here. For example, the researcher is more explicit in his assumptions, while the practitioner operates more intuitively, with concealed assumptions. The actions of the practitioner also presuppose assumptions, i.e. a limited theory. It is then arguable that there is nothing so practical as a good theory. But there remains one more antithesis namely that the researcher is interested in a general theory while the practitioner prefers a theory whose validity is geared to the practical situation and the active framework.

There is of course knowledge with a bearing on working life which does not possess the local character referred to here. This applies, for example, to social conditions extending beyond individual work places and connected with larger processes and structures, e.g. labour market conditions, legislation and other political and economic circumstances.

The question is whether there is a *centralist bias built into the organization of research* and also applying to working life. Research is organized in accordance with central principles so as to attain general knowledge. General knowledge is usually addressed to the centre of society, i.e. to those who have power and resources. Research usually takes less interest in the addressees of local knowledge, those who are on the periphery of society or those who are less well provided with power and resources. *The centre-periphery cognitive model is relevant to the politico-sociological model of centre and periphery*. The politico-sociological model has focussed attention on information-science and culture as instruments of power and as a resource. Johan Galtung, who has developed the theory of centre and periphery, shows that research is a clearly centre-reinforcing power in society and an instrument of central rule. (23)

The term centre as employed here refers to those who wield power and includes those who administer capital, administration and knowledge. Everywhere sectoral research is built up according to the same centralist pattern. The same applies to the organization of the Centre of Working Life. The importance of knowledge to practitioners in their creation of awareness and in their local development has perhaps been underrated. Resources of cognitive development need to be distributed better. Research should be disseminated as part of this distribution process. The local units would be better equipped with local resources of cognitive development to receive generalized knowledge and develop local knowledge.

Political change in society has to a great extent been conducted centrally via State intervention and legislation, and reform activities have to a great extent been constructed centrally. This has been connected with the possession by capital and market mechanisms of great power locally and with the difficulty which has sometimes been involved in mobilizing trade union resources at local level. The trade union movement is characterized by centralization and concentration. Democracy has sometimes been better able to assert itself centrally than locally. The co-determination question has been fought by a centralist strategy, and it is therefore natural that a centralist structure should also be desired for cognitive development. This centralist construction of cognitive output may come to counteract local initiatives and local mobilization. As workers acquire greater influence locally, they will also acquire greater need of local access to cognitive development in order to strengthen their awareness and autonomy.

Arguments of this kind can lead to conclusions concerning the organization of higher education and research, viz that it should be decentralized still more locally, that local units should be equipped with resources of cognitive development, at all events within the field of social science and the humanities, i.e. in certain occupational sectors such as the administrative-economic-social sector, the cultural-communicative and the health and care sector.

These arguments point an obvious moral concerning the organization of universities and colleges. They underline the need for decentralized arrangements even on the research side, e.g. local centres at higher education units organized on an interdisciplinary basis and with outgoing purposes including the mobilization of practitioners.

NOTES

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5. see note 1 above, p. 204-.

6. see note 2 above, p. 57 and 329-.

7. see note 2 above. p. 125-.

8. see note 2 above, p. 30.

9. see note 2 above, p. 51.

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14. Forskningsråd (Research Councils, Report of Research Council Committee) SOU 1975:26, pp. 26-27 and note 2 above, pp. 26-27.
    I use the terms practical relevance and scientific importance in the report referred to in note 13 above, p. 13.

15. see note 2 above, p. 232.

16. see note 13 above, p. 13. I use the terms practitioner relevance and scientific relevance for social significance and intra-disciplinary significance. The term intra-disciplinary significance is liable to be misunderstood. Intra-disciplinary must not exclude interdisciplinary, and "scientific" therefore seems preferable.

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18. see note 13 above, p. 13-.

19. see note 13 above, p. 3-.

20. Johansson, E.: Praktiker och samhällsvetare i kunskapsutvecklingen (Practitioners and social scientists in the knowledge development), mimeo, 1978.

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RESEARCH AND DEVELOPMENT FOR HIGHER EDUCATION IN SWEDEN. Some conceptual and policy problems.

by Rune Premfors and Björn Wittrock

INTRODUCTION

The sector of higher education occupies a key position from the point of view of science policy. Although the major part of the activities of research and development (R and D) in Sweden are performed outside the higher education sector, this sector, however, accounts for the main share of the research activities proper. It also serves as the sector where researchers active in other sectors receive their basic training. Furthermore, recently published reports of governmental commissions explicitly state that the role of the universities and colleges as the main research performing system shall be preserved and improved and that tendencies towards the further growth of public research institutes outside this system should be curbed.

In this text we will - in sections 1 and 2 - try to outline the main features of the Swedish sectoral research organisation for higher education. In section 3 we focus on three basic problems of the development and utilisation of knowledge for planning and policy-making and indicate their relevance to the Swedish case of higher education.

We should, perhaps, add that the present paper is a highly preliminary report from a pilot study on so-called sectoral science policy in general and on R and D for higher education in particular.

The emipirical material on which our account is based consists of official documents, internal memoranda, and a series of interviews.

1. AN OVERVIEW OF DEVELOPMENTS [1]

For a long period the R and D work performed in Swedish higher education mainly took the form of commissioned research for governmental ad hoc committees. Starting in the 1930s this type of research has grown considerably in scope and importance. The 1968 Educational Commission, U68, as well as other ad hoc committees such as those concerned with problems of admission to higher education have all commissioned fairly extensive research projects. In general it may be said that this research has been mainly concerned with either the "input" or the "output" aspects of the higher education system, i.e. with students and the labour market for graduates. But the social conditions of the student body were also investigated on a few occasions. Very little research commissioned by ad hoc committees had before the mid-1960s been concerned with the processes of education and research in higher education or with organisational aspects.

The establishment of a permanent organisation for R and D work in the late 1960s must be seen against the background of the system´s transition into a mass system in the 1960s; the number of students trebled in a few years and costs skyrocketed. What may be termed didactic rationalisation became a chief preoccupation at all levels of the system. The costs per student had to be reduced mainly through the use of educational technology. Many policy documents of the time disclose this optimistic belief: "once you have methods to compare different types of instruction in terms of impact, you have the basis for a more radical rationalisation of education", as it was expressed by the Chancellor´s Office. [2] The Office should strive for what was termed "total analyses of educational technology" for an ever-growing number of study programs in higher education in view of putting together "instructional packages, pedagogically composed of pre-programmed materials, sound recordings, television programs, and teacher-led instruction in various forms".[3) The Office remarked repeatedly in the late 1960s that higher education in Sweden was well behind the schools sector, and that it was behind developments in other countries (chiefly the United States) in the area of pedagogical development.

An effort to remedy this unsatisfactory condition was taken when the Office in 1965 appointed an ad hoc commission on university teaching and learning (known by the acronym UPU). The UPU was very active during its five years of existence and apart from producing an impressive number of reports it also initiated several pedagogical experiments and research efforts. Half through its work the commission came up with a proposal to create an institutional framework for a permanent R and D effort both at the central and local level. The proposal was favourably received by most interests and the new organisation could start on a small scale in mid-1969. At the central level a "unit for pedagogical development" was created within the Office of the Chancellor. At the local level planning started for "pedagogical development units" - one at each institution of higher education.

In 1970 the UPU published its final report, "Academic instruction". At the center of attention was didactic effectiveness. Referring to the fact that the U68 had been given that responsibility, UPU had refrained from treating problems of goals and structure in higher education. In practical terms tnis resulted in proposals which were mainly dealing with such matters as the pedagogical skills of teachers, instructional techniques and equipment, tests and evaluation, and student counselling.

Being the brainchild of UPU and considering also that its first director was brought in from the similar activities within the National Board of Education, the R and D program seemed at the time inevitably linked with the policy of didactic rationalisation. And, indeed, in some respects this would prove to be the case. The very fact that the sub-program concerned with the pedagogical training of university teachers was part of the R and D program in organisational and budget terms, reflected the UPU ideology: the skills and attitudes of individual teachers and students were the crucial variables. And the local network of pedagogical development consultants guaranteed that an important share of R and D activities was concerned with "current problems in the process of instruction", often of a very practical nature.

However, probably nobody did predict at the time of the final report from the UPU that the heydays of educational technology and didactic rationalisation would soon largely be over. This occurred in a peculiarly sudden fashion. We shall not here dwell on the determinants behind this development but only note that it seems to have been due, inter alia, to the sudden decrease in student demand - heaving off some of the most immediate pressures for rationalisation - and also to grass roots resistance. The fascination for educational technology was never half as wide-spread at the base as it was in the upper echelons of the system. 4)

If the drift away from what has been termed the "euphoria of educational technology" 5) was a general trend in Swedish education during the first years of the 1970s, the R and D program within the Chancellor's Office provides a good case, and a specific illustration. All three pillars of the program - the subprograms of research, development and university teacher training - evolved in the same direction, albeit at very different speeds. Indeed, a characteristic feature of the first years was the relative autonomy of the three programs: all seeking to establish their own identity.

An important determinant behind the drift away from didactics should not be overlooked: the people in charge of the activities. Although the director of the R and D program as well as (somewhat later) the director of the research subprogram were from the organisation for pedagogical development in the schools sector, both started out with ambitions to create a different profile for the program of higher education. And the director for the teacher training subprogram was not from pedagogics but a lecturer in English. In sum, considering the general trend away from didactic rationalisation and the people in charge of the activities, the R and D program for higher education was bound for reorientation from the very start.

The development subprogram was least affected: until the mid-1970s it was to stay fairly heterogeneous. From the point of view of the central unit it was largely a matter of administration of the work of the local units and the distribution of money for the development of instructional materials. Successively, however, so-called "common development projects" began to play a role, and here the central level was more active.

The second pillar of the program - the training of university teachers - was soon put high on the priority list of the Chancellor´s Office. An ambitious action program was launched in 1971. In the ensuing years the university teacher training program evolved into a broad scheme for the training of all staff in higher education and new approaches such as "organisational analysis" were introduced. 6)

At least as profound were the changes affecting the research program during the first years. The unit for pedagogical development had inherited some projects from UPU and the Chancellor´s Office had also been granting research support. When the research program was formalised as a separate subprogram in 1971, the dominance of pedagogical problems was heavy. Initially 13 out of a total of 16 projects were undertaken at departments of pedagogy or psychology (the remaining three being sociology, linguistics and business economics). In 1973/74 the number of academic disciplines had increased to 5 and in 1975/76 the figure was 9 - including subjects such as history, geography and political science. This development towards a greater number of disciplines involved in research on higher education was concomitant with changes as to problem areas. What was termed "the internal work of higher education" was given 62 percent of funds distributed in 1973/74 while "the role of higher education in society" used 30 and "higher education as a system: structure and governance" 8 percent. Only two years later (remember that we are dealing with the research program) the proportions were 35, 42 and 23 percent respectively. 7)

Apart from the changing focus of research problems and the diversification of the disciplines involved, the development in the style of management of the research program deserves a comment. In the action program for pedagogical development issued by the Office of the Chancellor in 1971 it was stated: 8)

> It should be underlined that the Office does not here function as a research council which distributes grants following applications. The research projects which the Office supports are instead designed in cloose cooperation between the Office and the researchers involved.

Soon, however, the research program began to take on features unmistakably similar to those of research councils. Already in 1971 invitations to apply for funds were sent to a broad spectrum of social science departments - considered a bold move at the time - and an external adviser was appointed to judge the quality of proposals sent in. During the following years, these procedures were elaborated and in the mid-1970s they were well established: Invitations were public and all proposals worthy of consideration were commented upon by outside experts. In addition, two teams of more permanent advisers existed. One was composed of university professors and their task was to consider the quality of proposals from a scientific viewpoint. The other group consisted of planners who were to preoccupy themselves with the relevance of research projects from the point of view of planning.

In 1975 both the research program and the program concerned with staff development were well established. The third pillar of the R and D program was, as already hinted at, much less coherent. Although its staff supervised the use of considerable funds, there was a wide-spread feeling that the program was composed of "what was left over". The Swedish Higher Education Reform of 1975-1977 provided the framework within which the development subprogram acquired an identity of its own and even came to dominate the central R and D program.

As part of the reform the Chancellor´s Office was transformed into the National Board of Universities and Colleges, effective from October 1, 1976. This implied a thorough reorganisation of the agency, affecting the unit for pedagogical development as well: a bureau for research and development was created - implying at least in formal terms an elevation of the status of R and D work. At the same time, the new bureau lost one of the three main subprograms of the old unit; the program for staff development came within the purview of another bureau.

An important consequence of the reform for central R and D activities was, however, of a more indirect nature than those brought about by the reorganisation of the central agency. As part of the framework decision concerning higher education reform taken by the Swedish Riksdag in 1975, the Office of the Chancellor (as it then was) was given the task of evaluating the reform. And during the autumn of that year preparations began within the unit for pedagogical development for an extensive follow-up program. The challenge which this program implied - and the political and financial support provided for it - transformed the development subprogram from being a fairly passive administration of local activities into an active effort for educational change. Again, the metamorphosis was given its specific character by the staffing of the program. Briefly put - we will return to details later - the conception of R and D work within the development program is characterised by an integration of analysis and action. Inter alia this results in an active involvement on the part of central staff in organisational change processes. They are now actively involved in R and D activities instead of merely administering them.

The reorganisation of the R and D activities and the relatively strengthened position of the development program increased the pressures for what many saw as a necessary integration of the "R" and the "D" for higher education. During all of 1976 and 1977 a debate was raging between the "separatists" - who wanted to keep the research program as an organisationally separate unit - and the "integrationists" - who, of course, wished to see the two subprograms merge. A concrete proposal from some proponents of the latter policy involved the organisation of all R and D work according to "themes" - such as recurrent education - which would mingle research and development activities of all kinds within the same program. An armistice was achieved through the introduction of two such themes as experiments from 1978/79. Since late 1977 a modus vivendi has been reached which for a foreseeable future accepts the existence of a separate research program.

By way of summary we have observed the following developments occurring in central R and D activities for higher education in Sweden:

- the primary function of R and D has changed from that of furthering didactic rationalisation to that of supporting higher education planning and, most recently, actively implementing the goals of the Higher Education Reform;

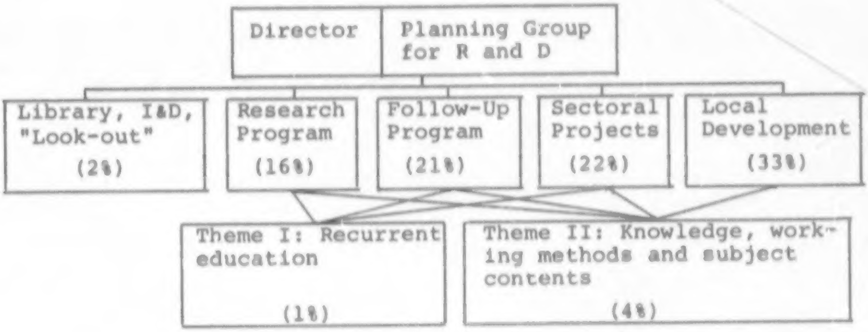
- the working methods of part of R and D have changed from fairly passive administration into active participation in projects;

- a characteristic feature of R and D for higher education has been the autonomy enjoyed by the subprogrammes for research, development and teacher training - an increasingly questioned feature, however, at least as concerns the separation of "R" and "D".

The intra-organisational warfare which has resulted from this relative autonomy of subprograms has furthered an intense debate concerning policy options. We will return to the merits of some arguments used in that discussion later - first we will describe in some detail the present organisation and activities.

2. PRESENT ORGANISATION AND ACTIVITIES

The bureau for research and development within the National Board of Universities and Colleges is a small unit employing some 15 people on a permanent basis, including secretarial staff. The following chart illustrates its main activities and their share in the overall budget:


Director
Planning Group for R and D
Library, I&D, "Look-out" (2%)
Research Program (16%)
Follow-Up Program (21%)
Sectoral Projects (22%)
Local Development (33%)
Theme I: Recurrent education (1%)
Theme II: Knowledge, working methods and subject contents (4%)

Note: The percentage figures given do not add up to 100 since a small item for planning (slightly more than 1%) is not included. Note also that the costs of the library are not in the chart. The 4% attributed to Theme II are artificially high; the costs are in reality much less.

The R and D program for higher education consists, as can be seen from the chart, of four main subprograms and a number of lesser activities of a supportive or specialised character. The information and documentation work covers all subprograms. What is called "look-out" in the chart refers to efforts to develop a specialised function responsible for processing information on higher education abroad.

As was hinted at above, the "themes" have been introduced in response to criticisms aimed at the alleged isolation of subprograms from each other. The first theme, recurrent education, is a joint undertaking with the National Board of Education. The second theme is of a more heterougeneous nature and has evolved from a project on "project orientation" in higher education. It is too early to state anything definite about the success or failure of the experimentation with themes as a basis fo the R and D organisation.

As can also be seen from the chart there exists what is called the "planning group for research and development". Within the National Board there are five planning commissions each responsible for an area of higher education which comprises a sector of the labour market and one or more faculty areas (such as social sciences). They are advisory to the board of management, the supreme decision-making body. 9) Although the idea had come up earlier it was not until early 1977 that two of the members of each planning commission were appointed to form a special group concerned with advising and coordinating the R and D work. It is probably fair to say that the group has had little impact so far. It has not contributed to what by some is considered to be badly needed: a coherent ideology for the functions of R and D in higher education. And it has not thus far affected the priority between the different subprograms.

The transformation of the Office of the Chancellor into the National Board also implied the creation of a new post as Deputy Chancellor and planning director. Among the tasks to be performed by this official is a special responsibility for the R and D program.

The local development projects make up the largest share of the budget of all subprograms. Seen, however, from the central viewpoint it is a very small program of an administering nature concerned with the distribution of funds for the local pedagogical development units. Recently the subprogram was robbed of half of its share in the budget: the pedagogical consultants are no longer paid from the central level.

The sectoral projects are forming a separate subprogram only since mid-1977. The projects have in common that they are aimed at problems which fall within the purview of one of the five planning commissions. To illustrate the idea behind this: while the follow-up program of the Higher Education Reform has started a project which investigates the working of the new system of study programs in general, several projects have been initiated by the planning commissions which follow up individual study programs. Some have questioned the rationality of this division of labour, fearing sectoral dominance over an increasing share of the R and D budget. The relative importance of the program for sectoral projects could be judged from the fact that recently a special supervisory body has been appointed by the Chancellor.

Having described briefly all important facets of the central R and D work except the research program and the follow-up program, we now turn to a more extended description of those two programs. Our interest is based partly on the fact that they make up the bulk of the central R and D work (although their added share of the budget stops at 37 percent) but also because they illustrate a number of basic conceptual and policy problems in the organisation of R and D activities in general.

The Research Program 10)

The share of the R and D budget going to the subprogram for research has decreased steadily over the last few years. In fact there has been a slight decrease even in nominal terms: from 1 900 000 Sw.Crs. in 1974/75 to 1 760 000 in 1977/78. For 1978/79 the nominal value will remain unchanged. In reality this implies a decrease in the neighbourhood of 10 percent. Undoubtedly this development reflects conscious priorities. The criticism against the research program and the political importance attributed to the follow-up program have been detrimental to an expansion of the former.

The general purposes of the research program have been stated repeatedly during the years of the program's existence. "The intention is to develop research activities of an international standard on the subject of higher education" and the program is aimed "at problems which are deemed to be of particular importance for the planning of future activities in higher education". The research which "goes on continuously and is not directly tied to current reform work", should "contribute to more knowledgeable and nuanced views and problem perceptions on the part of politicians and planners as well as teachers and students". This explicitly future-oriented research can "be expected to have a long-term and critical function since it will add a number of concepts which would otherwise be absent from planning and decision-making processes". It is probably fair to say that goal formulations have become more defensive in recent years: from being in the early 1970s one of three basically equal subprograms of the central R and D effort in higher education, the research program is at present something which "can hardly be more than a marginal activity in a sectoral R and D program although it may still ... mean an important complement to other R and D activities".

As we have already noted the planning and administration of the research program have unmistakeable similarities with the way in which ordinary research councils operate. By that we simply mean that invitations are made publicly for research proposals to be sent to the National Board before a certain date, and that researchers have an important say in the selection of research projects. Now, in reality the processes in which research problems are formulated and projects initiated are very complex and a nuanced description of how they work in the higher education research program must await empirical investigation.

During the first years of the research program most projects were in reality doctoral work although they were formally led by senior researchers. A conscious effort has been made in recent years to involve experienced researchers in research on higher education. Normally they have not been successfully engaged for thorough empirical analyses but rather have performed problem surveys and "state-of-the-art"-analyses. Another important activity within the research program has also attracted experienced researchers in various disciplines: the problem area meetings and conferences which have amounted to more than a dozen in the past few years.

As for the problems treated in the projects of the research program, the trends we observed earlier have continued. In 1977/78 5 out of 14 projects concerned teaching and research processes compared to another 5 aimed at problems concerning the role of higher education in society and 4 at the structure and governance of the higher education system. The number of disciplines engaged were 9 among which were philosophy and the theory of science. The subject getting the largest share was political science with 24 percent of the total sum spent on projects. The very conscious policy pursued as regards both the research problems and the diversification of subjects almost since the start of the program should serve to indicate that even if the influence of researchers has been great - and it has - they have not been the same throughout, and in a sense part of an overall strategy.

The research program is presently divided into four main problem areas: 1) The role of higher education in society; 2) Higher education as a system: structure and governance; 3) The environment and working methods of research; and 4) The environment and working methods of teaching. Another problem area has been added recently: 5) R and D organisation and planning. Areas 1, 2 and 4 have been studied since the start of the program; work in area 3 began in 1973 and work in area 5 in 1977. It seems safe to say that all these will be important for the future as well. However, it should also be a safe prediction that problems of research and the training of researchers will be accorded relatively more weight.

The Follow-Up Program [11)]

As we saw earlier the Riksdag decision on Higher Education Reform in May 1975 implied that a relatively ambitious evaluation of the reform was to be launched. Planning for what is supposedly a five-year follow-up program started within the central agency in late 1975. At present the program is running at full speed. In budgetary terms this means more than 20 percent of the R and D grant or close to 2,5 Mill. Sw.Crs. in the fiscal year 1978/79. While the budget of the research program remained unchanged in nominal terms, that of the follow-up program more than doubled. While this may reflect a genuine interest on the part of policy-makers in implementing the reform, it is obviously also to some extent an effect of the character of the political backing of the reform. Briefly put, many who formally rallied behind it hope that an evaluation of important aspects of the reform will bring about considerable modification.

The follow-up program starts from the assumption that the reform of higher education "can be looked upon as hypotheses, that will need to be tested and gradually adjusted". The purpose of the program,

> "is to contribute to the improvement of documentation for decision making concerning some of the measures, changes and initiatives which is needed for a continuous development. The projects, therefore, will be action oriented, which means that procedures and methods of investigation will be suited not only to the nature of the problems but also to the levels, bodies or persons who are meant to use the results of the investigations in their own decision making and activities."

There will be no attempt within the program to "produce a comprehensive picture or to make sweeping comparisons of the situation ˊbeforeˊ and ˊafterˊ".

The aspects of the Higher Education Reform which have been singled out for special follow-up investigations are: 1) The institutional organisation of higher education; 2) The budgetary system and activity planning; 3) Activity evaluation; 4) The contents and forms of education; and 5) Social effects of the reform. Problem areas 1, 2 and 3 are essentially covered by a single project while 4 and 5 contain three projects each. For instance, the social effects of the reform are investigated from the point of view of a) the effects of new admission rules, b) general effects on educational opportunity of the reform, and lastly c) effects on participation in higher education according to sex.

In addition to projects within the five problem areas there are projects which cut across problem boundaries and instead adopts a broader view - but limit themselves to a region or local area.

The follow-up program was during the first two years (from late 1975) led by a small group composed of three outside representatives (i.e. non-R and D staff) and a few members of the bureau staff. After the period of planning and initiating the projects, a new ad hoc group has been designed to supervise activities: it consists of six project leaders and a representative each of the bureaus of the National Board of Universities and Colleges. This model implies that four researchers are members of the group.

Although all projects within the follow-up program are to some extent permeated by the action-oriented philosophy of the leadership, working methods vary considerably from one project to the next. In many cases this is, of course, due to the nature of the problem. For instance, a follow-up of of the central regulations of admission to higher education institutions will naturally require a different approach from, say, the project concerning problem- and project-orientation in higher education. While the former project has as an obvious main purpose "to study the effects of the new rules of admission to higher education on the recruitment of students" 12) through the analysis of centrally and locally collected statistics, the purpose and working methods of the latter have been formulated in the following manner: 13)

> The purpose of this project is to produce a coherent and lucid description of theories underlying Swedish and foreign experiments in project-based studies, together with the experience thus gained, and also by means of seminars, questionnaires and other forms of information to lay the foundations of an improved and in the best sense of the term - critical interchange of opinions between individual teachers and students or groups of teachers and students concerning this way of organising studies. A third aim is to acquire better documentation for educational planning at various levels.

The project concerning activity evaluation is equally - if not even more - action- and "consumer"-oriented as this, while the remaining projects within the follow-up program are either fairly good examples of central policy analysis (e.g. the study on the effects of the new rules of admission, or an investigation of the new budgetary system now being planned - involving the National Audit Bureau) or more akin to commissioned research of a traditional kind.

To illustrate an instance of the latter we may briefly look at the project concerning institutional organisation in higher education. The reference group for the work is composed of nine people, three of whom are researchers/teachers, one a student, and the remaining being bureaucrats of some kind or other. The project leader is a business economist at the University of Gothenburg. Four research teams collect the empirical data for four regions. Purposefully they are of different disciplinary backgrounds: apart from business economics/organisation theory they are sociologists and political scientists. Relatively experienced researchers formally head each research team; in reality the work is largely done by research students.

Although it is perhaps too early to pass judgements on projects within the follow-up program, some of them seem to have encountered a common difficulty: university researchers tend by the pressures of their immediate environment to transform tasks which mainly imply mundane data collection and down-to-earth report compilation into disciplinary excersises which could potentially earn them professional prestige. We are not saying that this is always a bad thing - on the contrary it is often the best quality check - but it certainly often produces tensions in R and D systems.

3. CONCEPTUAL AND POLICY PROBLEMS

In this section three basic problems of so-called sectoral R and D are treated. Their relevance for policy-making, policy-implementation and planning for higher education is examined.

Research, Forecasting and Evaluation in Policy Processes

It is customary to state that the formulation and implementation of well-founded courses of action presuppose the utilisation of knowledge derived from activities of forecasting, research and evaluation. However, such utilisation is apt to be haphazard without a comprehensive view of the role to be played by such activities in various stages of policy processes. 14)

In the case of R and D for the Swedish higher education sector there existed originally at the agency level at least elements of such an over-all view. As already indicated this conception was characterised by a focus upon problems of educational technology, by a centralistic view of processes of innovation and diffusion, and by a lack of systems orientation. Obviously, a general conception of this type would seem to be inconsistent with important developments not only in the higher education sector. It was also inconsistent with the emergence in the late 1960s and the 1970s of a new option oriented planning conception in Sweden in contradistinction to an earlier more narrow and sequential and implementation oriented view of planning.15) It should then not be surprising that the R and D model of educational technology was gradually abandoned. In the ensuing period three features stand out.

First, the R and D organisation for higher education has been in a state of flux where a number of proposals for reorganisation and change have come up and been partly put to work and partly discarded. This can, of course, be interpreted as a sign of vitality and capacity for innovation. However, considering the long lead times and the long-ranging nature of effects of measures in the higher education system this interpretation should not be lightly accepted. It might equally well be interpreted as a sign of efforts to manage uncertainty as to the role of the R and D organisation itself. In that case it might be suggested that the origins of uncertainty are not so much to be found in a turbulent environment. Rather they stem from difficulties in establishing and maintaining viable and close contacts with other parts of the planning and policy-making apparatus of the central agency as well as with other interested parties.

Second, elements of a more comprehensive view have been elaborated by individual members of the R and D organisation of the National Board of Universities and Colleges.

Third, it would be naive to expect that a single encompassing view would be officially put forward that in detail accounts for i.a. relations between long-range forecasts of the development of the higher education system and the formulation of policy problems of a short-range nature, or for relations between the different roles to be played by research and development in processes of long-range forecasting, in the clarification of basic objectives and goals, in providing inputs into processes of short-term planning and in the evaluation of implementation processes. However, this does certainly not prevent different comprehensive views from being arguable. But so far discussions on the R and D organisation of the NBUC have instead tended to treat these different roles in isolation from each other. But, surely, it is not at all clear that a sectoral R and D model that is appropriate from, say, the point of view of studies of objectives and valuations or of evaluation also has a general applicability. The point is that it is difficult even to pose these kinds of issues in the absence of some overall conception of the role of forecasting, research and evaluation in processes of policy-making, implementation and planning. So far only elements of such a conception exist in the field of R and D for higher education.

R and D for Short-range and Long-range Planning

A prominent feature of the Swedish R and D program for higher education is the difference in both time perspective and organisational forms of various subprograms. Specifically, it is usually stated that the major part of the R and D resources, including those of the follow-up program, should be devoted to short- and medium-range issues of immediate relevance to the existing organisation of administration and planning and be mainly guided by the conceptions of planners and administrators. On the other hand, it is argued, there should also be a program - although only a marginal one - where university scholars can exert a considerable influence. Studies within this subprogram, the research program, should focus on long-range problems and not be constrained by demands for inputs into short-range planning and administrative processes.

Now, this may appear to be an attractive and pluralist way of organising research and development work in a policy area. However, it is both possible and useful to uphold a distinction here between the organisational forms for initiating and supporting research and analysis and the intellectual content of the products of research and analysis. 16) If a gross dichotomy is made in both these respects, it is easy to see that there seem to be two main components that fall outside the existing schema for R and D for higher education:

(1) long-range studies - perhaps in the form of sectoral or cross-sectoral futures studies - that are designed to serve as inputs into current planning processes and that organisationally are linked to the existing machinery.

(2) studies of the short- and medium-range problems of forecasting, planning and administration that in organisational terms are relying to a large extent on competence from outside the central agency itself.

The initiation of studies of both these so far largely neglected types seem to be well in line with ideas put forward by governmental commissions during the 1970s. 17) In the first case one is reminded of the report To Choose a Future of the Alva Myrdal commission on futures studies. 18) As to the second case many of the pronouncements in the recently published report on Research Policy indicate the need for external competence and for promoting evaluating, questioning and critical studies within the framework of so-called sectoral R and D. 19)

Evaluation and Analysis as an Organisational Problem

The desirability of stimulating critical analyses and evaluations of sectoral problems from perspectives other than those of official agencies and organisations is a recurring theme in the Swedish discussion on science policy. Not least has it been emphasized in reports of governmental commissions. Statements to the same effect are also amply to be found in documents from the R and D bureau of the National Board of Universities and Colleges. What is less frequently recognized is that independent analysis and evaluation is not only a matter of intellectual perspectives. In the last instance it must be tied to the institutional problem who is to judge what studies are to be initiated and supported and what results are to be considered. 20) But then it is necessary to explicitly discuss alternative ways of organising research in the policy area so as to secure the intended degree of independence. And if such research and studies are to be institutionally attached to e.g. a central agency, then alternative compositions of decision-making bodies for R and D and alternative sets of rules specifying the competence of intrested parties should be examined and discussed. This problem, which certainly does not co-incide with the problem of "integration" or "separation" of various sub-programs, seems to have received surprisingly little attention in discussions on R and D for higher education.

Conclusions

The conclusions of this section can now be summarized:

(1) The well-founded utilisation of knowledge derived from forecasting, research and evaluation presupposes always some comprehensive conception specifying the role of these activities in different stages of processes of planning, administration and implementation. So far only some elements of such a comprehensive conception exist in the case of Swedish R and D for higher education.

(2) A distinction can be made between the organisational forms of research, analysis and evaluation and the intellectual content of the products of such activi

ties. Then two main components seem to have been largely neglected in the Swedish R and D for higher education, viz.

(A) long-range forecasts or sectoral futures studies designed to serve as inputs into existing processes of planning

(B) short- and medium-range studies of current planning and administration that to a large extent are organisationally independent of the requirements of the central agency and its planners

(3) Despite the heated discussion on the "integration" or "separation" of various subprograms on higher education little attention has been devoted to explicitly discuss and examine the organisational and institutional requirements for securing the existence of outside competence in the given policy area.

NOTES

1) A detailed history remains to be written. Another sketch - apart from the one attempted here - is provided by Torsten Husén in Noel Entwistle (ed.) *Strategies for Research and Development in Higher Education* (Amsterdam 1976), pp. 202-219.

2) *UKÄ:s petita (tryckt version) 1969/70* (Stockholm 1968), p. 87.

3) *UKÄ:s petita (tryckt version) 1968/69* (Stockholm 1967), p. 94.

4) A fascinating case study is provided in Barbro Berg and Bertil Östergren, *Innovations and Innovation Processes in Higher Education*, Stockholm 1977, pp. 89-100.

5) An expression attributed to the well-known Swedish educationist Torsten Husén.

6) For that story, see Hans Jalling, "University Teacher Training in Sweden".

7) "The UHÄ Programme of Research into Higher Education" *R&D for Higher Education*, 1977:8 and "The Swedish Programme for Research into Higher Education", *R&D for Higher Education*, 1978:4.

8) Cited from *UKÄ-petita (tryckt version) 1972/73* (Stockholm 1971), p. 18.

9) The precise role of the planning commissions is far from clear, as will be shown in a forthcoming study by *Agneta Bladh* of the Group for the Study of Higher Education and Research Policy.

10) See primarily the document cited in footnote 7 above.

11) "The UHÄ Programme for the Follow-Up of the Reform of Higher Education", *R&D for Higher Education*, 1977:1; also "Lägesrapport från UHÄ:s reformuppföljningsprogram", 1978-02-28 (mimeo).

12) "Uppföljning av de nya tillträdesreglerna till högskoleutbildning (Tillträdesprojektet)", *FoU för Högskolan*, 1977:12, p. 1.

13) See *R&D for Higher Education*. 1977:1, p. 10.

14) Cf. Mario Bunge, The Role of Forecast in Planning, *Theory and Decision* 3 (1973) pp. 207-221

15) The option oriented conception of planning is outlined i.a. in the following reports and official texts: Forskningspolitik. Betänkande av forskningsrådsutredningen, SOU 1977:52 (Liber Förlag, Stockholm, 1977) p. 123 f (An English summary is now available, Research Policy in Sweden, Stockholm 1978); Forskningsråd. Betänkande avgivet av forskningsrådsutredningen, SOU 1975:26 (Liber Förlag, Stockholm, 1975) P. 274 f; Om Planering vid Statliga myndigheter, Statskontoret (Liber Förlag, Stockholm, 1977) p. 12 f; Proposal for a Reform of the Swedish Budget System, Ministry of Finance (Allmänna Förlaget, Stockholm, 1974) pp. 42-45; Statsförvaltningen planerar: aktörer, rollfördelning, samverkansformer, Statskontoret (Liber Förlag, Stockholm, 1974) p. 7.

16) In the Swedish debate especially Sverker Gustavsson has argued forcefully for the relevance of this distinction, recently i.a. in Sverker Gustavsson, Forskningens inre och yttre organisation, in: Vetenskapsmannen och samhället, K. Johannesson (red.) (Kungl. Vetenskapssamhällets i Uppsala Handlingar, 19, Stockholm, 1977) pp. 41-47.

17) Studies of a long-range nature have, however, been performed within the framework of governmental commissions. See e.g. Eskil Block, Framtidsmiljö för utbildning (Tema, Utbildningsförlaget, Stockholm, 1971).

18) To Choose a Future (Ministry for Foreign Affairs in cooperation with the Secretariat for Futures Studies, Stockholm, 1974; original Swedish edition by Allmänna Förlaget, 1972, SOU 1972:59) chapter 4 and (in the Swedish edition) 9.

19) Forskningspolitik. Betänkande av forskningsrådsutredningen, SOU 1977:52 (Liber Förlag, Stockholm, 1977) chapter 7, particularly pp. 130-133.

20) This point is argued persuasively in Aaron Wildavsky's seminal article The Self-Evaluating Organization, Public Administration Review 1972 (September/October) pp. 509-520.

REPORT FROM DISCUSSION GROUP
GROUP 5 — rapporteur Rune Premfors

1. Report from group work

The first few work sessions of this group - specifically concerned with R&D organization and planning in higher education - were devoted to a discussion of a number of the general issues of process and structure raised in the contributed overview papers and during the plenary sessions. The plethora of general and complex problems brought up in those fora could of course only be touched upon briefly; maybe the chief function of this initial part of the work was to remind the Swedish participants of, and introduce foreigners to, facts and values prevalent in the present policy debate within higher education.

Successively, however, the efforts of the chair resulted in a more firmly structured discussion: the group members began "mapping domains of concern" for R&D organization in higher education, as the phrase went. Expressed in a somewhat different fashion, this implied attempts to identify trends, present policies, and possible future actions in some important problem areas of R&D for higher education. An initially larger number of such domains were soon collapsed into the following five: levels of organization, definitions of R&D, types of knowledge needed, change processes characteristic of Swedish higher education, and procurement policies. In the sequel, I present briefly some of the observations which were made in relation to each of these problem areas.

a) Levels of organization. The mapping of this domain resulted in a listing of the very large number of levels which constitute the Swedish system of higher education, and which ideally should be supported by R&D activities related to their specific needs and problems. At least seven levels can be identified for the purpose of organizing R&D work:

1 Ministry of Education
2 National Board of Universities and Colleges
3 Regional Boards
4 Institutions
5 Faculty/Program Committees
6 Basic Units
7 Individuals

As the discussion amply illustrated, the kinds of decision taken at each of these levels of the system vary greatly. There exist also, it was observed, various tensions and ambiguities as between the different levels. Needless to say, such conditions must affect the design of the R&D organization.

A more specific instance of the general problems engendered by a multiplicity of levels, is the present drive for decentralization of decision-making power in the Swedish system. While a majority of actors at all levels seem to be generally in favour of these efforts, this has not prevented a very confused and uncertain situation from developing. The dependence of R&D activities upon other organizational aspects is such as to hinder the R&D organization to find its appropriate forms and contents before the uncertainty brought about by decentralization has subsided.

b) Definitions of R&D. The crucial importance of a conscious definition of R&D was stressed in the group. Conceptual clarity is (almost) always a desirable thing in itself - but in the area of R&D organization for higher education, two specific arguments may be added to this general preference for intellectual order. First, the ambiguity of the

R&D concept has, at least, contributed to the considerable tensions between "research" and "development" as concerns resource and status allocation. Second, a fairly uncritical acceptance of an R&D concept developed within the defense sector and in industry, occurred in the early days of the organized effort of R&D for higher education. Many images and understandings used in more "technical" sectors have certainly proved to be disfunctional when borrowed by the more "social" sectors - such as higher education.

Many distinctions were suggested in the group as part of a definition of R&D. An example is that which separates R&D activities which essentially operate in a monitoring mode from those which, by way of contrast, operate in a creative mode. The former are means of control while the latter ideally serve as stimuli to self-transformation. Both kinds of R&D are legitimate and perhaps even necessary, but the balance struck between them implies a very important policy choice.

c) Types of knowledge. The levels of the organization to be served and the definition of R&D both constitute considerable restrictions on the types of knowledge produced. However, it is also possible, as the group did, to provide a more explicit and concrete shopping list of knowledge needed. Each member produced a list, more or less extensive and realistic. The example furnished below gets a special significance from the fact that it was provided by the Chancellor of the Swedish Universities? He wished to have:

- knowledge for the continuous development of different alternatives for the future of Swedish higher education
- knowledge reviews - national and international - relevant for Swedish higher education
- long-range studies in co-operation with other sectors affected by and/or affecting higher education

- development of planning methods for higher education
- contributions to an understanding of wider problems such as the economic future of small countries on an integrated world market.

As someone remarked, the production of the listed types of knowledge would imply an R&D organization on quite another scale than today.

d) Change processes. The mapping of a domain encompassing the complex problem of "change processes characteristic of Swedish higher education" was bound to be somewhat superficial in the circumstances. Essentially, the discussion concerned more general than typically Swedish attitudes and actions in the face of change in organizations: what is the impact of general political, economic or cultural developments?; what is the importance of "ownership" of innovations?; when is change regarded as a source of insecurity and when seen as safety?; what is the importance of various mechanisms to support change (such as networks, consultants, etc.)?

e) Procurement policies. The discussion in this problem area concerned some of the basic choices to be made in R&D policy. The models outlined by "FRU" were introduced: should R&D activities for higher education operate according to a "project model", a "programme model" or some other model? Should the inhouse R&D capability be considerably strengthened in the NBUC? What balance should be struck between temporary and permanent arrangements? What should be the exact role of centrally managed R&D in the new decentralized organization? To what extent would central initiatives and incentives be necessary to "produce" what is termed "institutional research" in the U.S. The answer to the last question was seen as heavily dependent upon the success of the general aim of the Swedish higher education reform in creating institutions capable of self-renewal and self-evaluation: ideally, these reformed institutions should in the future devote a considerable share of their resources to this type of R&D work on a continuing basis.

To end this very brief presentation of the group work, I cite the chairman - Hendrik Gideonse - who pointed to two overall conclusions he personally had drawn from the discussions. First, it is of importance that the problem of R&D organization for higher education in Sweden is viewed upon as much larger than is implied by the present responsibilities of the R&D program *per se*. Further, much more attention should in the future be given to the development of alternative policies for R&D organization.

2. Research Priorities

There are, in my view, several good reasons for undertaking research on R&D organization in higher education. Apart from the argument, which is becoming a truism, that R&D problems should be analysed because public policy in many sectors is becoming increasingly dependent on research-based knowledge, two others could be added of a more specific nature. First, as is the case with several other central agencies in Sweden, the NBUC is at present experiencing a dramatic shift in its role. Although much is uncertain about the proper role of the Board in the reformed system of higher education, it seems safe to predict that its influence must increasingly be based on superior knowledge instead of using formal powers to regulate other parts of the higher education system, the NBUC has to become a consultant, listened to because it possesses expertise in vital policy areas. 1) Perhaps the prime task will be the formulation and execution of a policy of knowledge development for the sector of higher education. Although this is a broader task than that of R&D organization, there should be no doubt concerning the crucial part played by R&D activities in such a scheme.

Another good reason to study the R&D organization carefully may, I think, be derived from the future role of the NBUC in the field of general research policy. As is evident from a recent statement [2] the Board seeks a considerably more active role both as regards the policy aimed at fundamental research and sectoral research policy. A research effort concerning R&D for higher education could well enhance the competence of the NBUC in tha research policy field, and also serve as a good example: the Board should, in other words, strive to head developments towards a conscious policy of knowledge development.

Apart from these arguments motivated by strict policy considerations, R&D for higher education is certainly worthwhile to add as another case of sectoral research organization. Although in monetary terms a small effort, and in spite of the special function which the system of higher education performs for overall R&D system, the workings of the R&D organization for higher education is of general interest, and the analysis of it should enhance our understanding of the general phenomenon.

What has been accomplished so far in the area? It should first be noted that the internal discussion of R&D organization within the NBUC - sometimes engaging outside participants - has been very lively and not seldom sophisticated: any piece of research on R&D for higher education had better make us of the insights produced in that continuing discussion. However, if we exclude these inhouse efforts, only three projects have been initiated in the problem area.

First, the well-known American scolar in the field of higher education, Martin Trow, was in 1975 asked to evaluate the R&D program of the NBUC, notably the specific research subprogram. His small study turned out to be primarily concerned with the problem of creating a research community in the field of higher education. The impact of R&D on sectoral planning was not discussed at length. The thrust of the argument was, however, that a general support of interested researchers would prove to be a far better investment in the long run than specific research undertakings initiated by the Board.

A second piece of research is being undertaken by Edmund Dahlström and Esbjörn Johansson of the Department of Sociology of the University of Gothenburg. It is partly reported in an overview paper to the conference. The thrust of that research efforts concerns "the process of interaction between practitioners and social scientists in the process of cognitive development entailed by sectoral R&D", where cognitive development is used in a "broad sociology of knowledge meaning referring to processes of knowledge development on a collective level". Apart from higher education research, consumer case and the working life case are well under way, the study of higher education has barely begun as of yet. 4)

The third and most recently incepted piece of research dealing with problems of R&D for higher education is also reported from in an overview paper to the conference. The study - by the present author and Björn Wittrock, both working with the Group for the Study of Higher Education and Research Policy of the University of Stockholm - is very limited in scope and of pilot character. The two main themes pursued are (a) an effort to clarify the concept of sectoral research policy in Sweden, in particular as regards the relations between R&D and sectoral planning, and (b) an illustration of that concept using the R&D organization for higher education. 5)

As this brief overview of the accomplished and ongoing research has shown, the area is largely untouched. However, the study by Dahlström/Johansson includes a list of important research questions, and the Premfors/Wittrock pilot study may well lead on further research at a later stage.

Although one of the chief aims of the conference, and consequently of the group work, was to "specify possible initiatives, e.g. in the form of outline proposals for research projects", no such proposals were produced within the group concerned with R&D organization and planning. The responsibility for the research proposal as outlined below falls, then, largely upon the present author. 6)

Granted that the problem area is largely uncovered, and that the task is to formulate a concrete research proposal - not an extensive research program - we are faced with a problem of priorities: what aspects merit to be studied in an initial research effort? If we want a list of research questions, and even formulated hypotheses, we may well start by scanning the recently published work by Peter Stevrin. 7) That excellent and comprehensive study of the development and current problems of sectoral research policy is by itself, I think, sufficiently exhaustive to provide a basis for a long-term research program. But, again our problem was to design a more limited piece of research. The Stevrin study confirms the impression which guided the selection of focus in the Premfors/Wittrock pilot study. In a rather curious way, both policy makers and researchers have neglected the relations between R&D and planning. As Stevrin summarizes a relevant section:

> "Against the background of what has been said so far, it is my contention that the claim that a close relationship exists between R&D and sectoral planning and sectoral policy is a ˊmythˊ. That such a relationship ought to exist is quite another matter."

The research proposed here should focus on what may be termed "linkages" between R&D and planning in higher education. By linkage we may provisionally mean any type of relation between the "R&D system" and the "planning system", be they intellectual, social, power relationships or what have you. The "systems" should not be narrowly defined but, rather include other actors than those formally concerned with R&D and planning; politicians will, for instance, constitute an important set of actors in the Swedish context. Although one tends to think most often in terms of the impact of R&D on planning contents, the relationship is of course mutual (to the extent that it exists): the problem could as often to be translate the needs and wishes of planners to a language understood by researchers as the reverse. In general, individuals acting as translators between the two systems may be of crucial importance.

Concerning the impact of R&D activities on planning, conceptual work has been accomplished in a growing body of literature. An insight provided in many studies, is that the impact of research is - if it is at all possible to trace - more often long-term, indirect, and conceptual rather than short-term, direct and instrumental. 9) A study of the impact of R&D for higher education on central planning within the sector should, of course, learn from this and try to get at these more subtle mechanisms. There should be no doubt about the difficulty of such an analysis, and the perceptive and imaginative thinking required to perform it in a satisfactory way.

The main purpose of the proposed research should be conceptual clarification in view of future policy. However, it is important to stress two features. First, the project should not be expected to result in detailed organizational proposals but, rather, make explicit the basic policy choices involved. Second, the conceptual work proposed could never proceed satisfactorily without empirical illustrations. Below a list of such studies to be part of the research is provided.

A special problem emanates from the fact - pointed out with some emphasis in the discussions of the group concerned with R&D organization and planning - that the Swedish system is composed of several levels with very different decision-making characteristics, and a great variation as to their actual use of and their need for R&D support. Ideally, the proposed research concerning linkages between R&D and planning should include all levels, and also analyze the complex relationships which exist between levels. Realistically, however, an initial research effort ought to concentrate on central planning and centrally managed R&D activities. At a later stage, and this should be taken into account if and when a research program is designed in the area, the research ought to be extended to other levels as well; such an extension would be of considerable interest from the point of view of current developments in planning theory as well as against the background of the policy trend toward decentralization in Swedish higher education. What has been said here concerning the multi-level problem does not in any way imply that all discussion of it would be excluded from the proposed research. Even if that course of action had been desirable, I think it would have been impossible: center-periphery problems and the issue of decentralization are part and parcel of policy considerations of the central level.

The thrust of the research should, then, in summary fashion, concern conceptual clarification in view of policy action of linkages between R&D and planning at the central level of the Swedish system of higher education. The end result may be imagined as a set of alternative models containing types of R&D, types of linkages, and types of planning; the selection of a certain type of, say, planning, imposes important restrictions on the choice of R&D types and linkages, etc. If this seems overly rationalistic, I may hasten to add that I do not for a moment believe that a single, best solution will be formed to all pertinent problems: genuine dilemmas will most certainly have to be confronted. There is not, I think, any risk at all that relevant literature will be lacking dealing with these general concepts - as concerns planning the body of works is now extremely rich, while the literature on R&D organization is growing fast. The emerging literature concerning policy analysis should also be surveyed. However, as hinted at already, in order to enrich the conceptual work and also to prevent the research from becoming "mere conceptual exercises" with little or no bearing on R&D policy for higher education, a number of "illuminative" studies [10)] should constitute an important part of the design? The following preliminary list may be suggested:

a) A study of the development of the R&D activities in Swedish higher education with special reference to "linkages" as defined above. The basis for such a study exists through the sketch provided in the Premfors/Wittrock overview paper. 11)

b) A study of the development of the organization and contents of central planning in Swedish higher education. Some work has already been accomplished here, but most of it remains. 12)

c) Special studies of the utilization of research by ad hoc committees. I propose the UPU and the U68; at least in the case of U68, considerable information exists already. 13)

d) A few studies of instances where it is generally believed that R&D activities have actually had an impact on policy developments. Examples are: the often cited analyses of student flows in the early seventies; the impact of research on geographical distribution of student demand upon localization policies; and, perhaps, the impact of work on forecasting models on manpower planning policy.

e) One or two studies of instances where heavy investments have been made in R&D work, but where this is generally believed to have had little or no impact on policy planning.

f) A few studies starting from identified policy changes, and asking what kind of knowledge supported them, what part was played by systematic R&D efforts, and, particularly, in what way R&D was linked to policy.

g) A study of a set of linkages during a more extended time period: perhaps the best "policy dimension" would be admission policy or, alternatively, student aid.

h) A comparative analysis. Realistically, this must draw upon existing accounts, particularly those of "FRU"

(Government Commission on the Organization of Research Councils) and Peter Stevrin.[14)] To some small extent, foreign experiences may be included as well.[15)]

Added together, and considering that the (strictly) conceptual work is not in the above list, these elements may seem to form a very large undertaking. However, it should be kept in mind that, given the overall aims of the research, the suggested overviews and case histories need not be too detailed or even accurate in every single respect: they should only be largely so since their chief function is to enrich conceptually the discussion of basic policy choices. This goes for the comparative study as well: preliminary but perceptive comparisons with a small number of other sectors may turn out to be as conceptually fruitful as a more detailed an encompassing analysis.

NOTES

1) For a very recent discussion, see Decentraliseringsutredningen (Government Commission on Decentralization), "Lägg besluten närmare människorna!", *SOU 1978:52*, esp pp 45ff, 99f and 116.Cf. also the work by Peter Stevrin cited in footnote 7 below esp part VII and pp 266f.

2) "Forskningsplanering och forskningsadministration. UHÄ:s yttrande över Forskningsrådsutredningens och Forskningsutbildningsutredningens betänkanden, Juni 1978". *UHÄ-rapport 1978:12*, pp 78-81.

3) Martin Trow, "The Creation and Support of a Research Community on Higher Education: A Report to the University Chancellor's Office". *R&D for Higher Education 1977:3*.

4) See Dahlströms overview paper "Interaction Between Practitioners and Social Scientists in Research and Development", *infra*, where references are also found concerning other publications within the project.

5) The Premfors/Wittrock contribution is named "Research and Development for Higher Education in Sweden. Some Conseptual and Policy Problems". See *infra*.

6) Although the final formulations must be the present author's responsibility the ideas are very much the outcome of discussions with my colleague Björn Wittrock.

7) Peter Stevrin, Den samhällsstyrda forskningen. *En samhällsorganisatorisk studie av den sektoriella forskningspolitikens framväxt och tillämpning i Sverige* (Stockholm, 1978).

8) Ibid., p 234 (my translation).

9) The relevant literature is beginning to require a bibliographic survey. Here I just want to share with the reader one of my recent *lesefrüchte* in the genre: Robert F. Rich, "The Use of Science in Policy-Making: A Comparative Perspective on Science Policy", in Douglas E Ashford (ed.), *Comparing Public Policies. New Concepts and Methods*, (Voluma IV, Sage Yearbooks in Politics and Public Policy, 1978), pp 99-100.

10) For a discussion of this concept, see Barbro Berg & Bertil Östergren, *Innovations and Innovation Processes in Higher Education*, Stockholm, 1977, pp 15f.

11) Premfors & Wittrock, *op cit*, *infra*.

12) See, *inter alia*, Bo Lindensjö, *Problem och handlingslinjer i sextiotalets universitets- och högskolepolitik. En studie i offentlig reformstrategi*, University of Stockholm: Group for the Study of Higher Education and Research Policy, Report No 3, 1977; and Rune Premfors & Bertil Östergren, *Systems of Higher Education: Sweden* (International Council for Educational Development, New York 1978), esp chapter 4, "Planning".

13) *Bo Lindensjö* of the Group for the Study of Higher Education and Research Policy is at present completing a report on work of U68, including the role of research in that context. See also Gunnar Bergendal, "Some Experiences of 1968/78 Reform Work in Swedish Higher Education". *Paedagogica Europaea*, Vol XII, 1978-2.

14) For an English-language summary of the views of "FRU", see *Research Policy in Sweden* (Stockholm 1978). The Commission published its case studies in a Separate volume, "Sektorsanknuten forskning och utveckling. Sex fallstudier", *SOU 1977:53*.
Peter Stevrin´s analysis is based on the same material, see Stevrin *op cit*, part VIII.

15) To cite a conference-related example of foreign experiences: Hendrik Gideonse, "Can the Federal Government Use the Futures Perspective?" in M. Marien & W. L. Ziegler, *The Potential of Educational Futures* (Worthington 1972).

V CONCLUDING DISCUSSION

Gunnar Bergendal

As a practitioner working within the largest university of this country I should like to take up two questions. One problem is whether diversity is possible within a unified system. This has been discussed here mainly from the point of view of the possibility of high quality research in mass institutions, and I agree that this is a very urgent and relevant problem. We must have institutions for high quality research and universities should be such institutions. But as I mentioned yesterday there are many other dimensions of excellence in a higher education system, and all the good work done in the previous structure within schools of social work, within the teacher colleges, schools of arts, music etc has to be given possibilities to develop according to the conditions and goals of these schools. In the new structure they should be able to take advantage of the closer neighbourhood with other kinds of higher education, without being uniformized into structures that are alien to these activities.

One impression after the first year in the new organization would be that in the universities - for fairly obvious reasons - governing boards are settled fairly firmly in the university type of attitudes. For such reasons there might be a tendency that university values would prevail over other value traditions that are now within the same university. There are built in safeguards against such a uniformization. One safeguard is the structure of programme committees, where each educational programme has its planning committee within the university. The interplay between those committees and the board, and other parts of the structure that are intended to promote cooperation and interchange of ideas make up an interesting pattern.

Going back to Edmund Dahlström's patterns of knowledge development, it is a scientific knowledge development which is the accepted one within universities. Other kinds of knowledge development, say the one connected with teacher training or the training of musicians, have low status within the universities and within the higher education structure. Here may be one of the forces at work against the diversification of higher education institutions. So this is one problem that to me is urgent to look into, and where I think that research should be done, not to give solutions but to help governing boards, administrators, people working in the institutions to get an insight that would help a good development of our higher education system.

My other problem is the role of the centre. This is felt particularly in my field of activity, teacher training, where the centralism of the National Board of Education - that was earlier the central board for teacher training - was ten times tougher than the mild centralism of the old Office of the Chancellor. I have a feeling that if we don't find the good relationship between the centre and the institutions in the new decentralized system, the pendulum will very soon swing back to a higher degree of centralism, and if we want to promote a good decentralization we have to get insight into the good role of the centre. We listed yesterday quite a few functions of the centre and I won't repeat them. You have the paper. Personally I want to stress one of these functions, namely the ideological function of the centre. I don't think that we can make a system which works only on negotiation, where we say that consensus is something which is not modern. I admit that we cannot rely only on consensus, and in the pluralistic society it's by definition not possible to rely only on consensus. But if we are at all to have a kind of higher education community, if we are at all to have a basis for negotiation, there must be some basic consensus. To develop a consensus, to develop an ideology which really covers the whole broad field of higher education and also permits this diversification that I started with, is a central task for the centre. One should therefore investigate how the centre functions in this country, the role of the centre. This is fairly urgent because the pendulum will swing back within five or ten years time, if we don't find a good relationship between the centre and the institutions.

Maurice Kogan

About what Gunnar said: I must say that I entirely agree with the points that he made. But could I make a more general reflection, which is that the reforms that we have been discussing, are to a large measure a product of social science thinking of the 1950-1960s, and I pick up two particulars here. One is the attacks by sociologists and psychologists on concepts of native intelligence. But the second and more subtle contribution of social science really stems, I suppose, from sociology of knowledge, which lead on to concepts of institutionalism, and so in Sweden we see the last phase of the Lutheran revolution, in which the priests, the academic priests, are to some extent brought down.

However, these are major examples of how social science thinking has affected policy and moreover how the changes have been made from the top rather than from the bottom. And that again is an important Swedish characteristic. Now then, going back to what Gunnar has been saying, we ought to consider what are the growth points in applied social science of today. One that I pick out is the way in which changes in policy at the macro level have impact on clients, on recipients, on the basic institutions. Changes at the centre are of critical importance for what happens in a basic unit, to the students and the teachers there. And I very much welcome therefore, the tone and sense of Group one's report, where they talk about climate and the way in which that climate can be empirisized. It means that the focus of study and research should go from the large scale or macro changes to an examination of what are the various types of departments, basic units, relationships within them, power systems within them, into what I would hope would become normatively the multimode of department, the multimode of basic unit, that can combine the demands made of the society with growth and creativity and strength and confidence at the level, where the work on generating and transmitting knowledge has to happen. This is not in any sense an anti-centerist or anti-etatist attitude, but the criterion variables are what happens down there, it is from there one can project the role of the center and of the intermediate institutions.

Ulf Himmelstrand

Well, I would like to supplement some of the images we have of Sweden as very centralized in its organization of higher education. I made this point yesterday in our group. In fact UKAS, the first reform which was "superimposed" on the universities, to a very high extent was the result of pressures from student groups, at the time when Olof Palme was a board member of the federation of student unions. I remember that, when I was a member of a social democratic student group in Uppsala there were studies showing that the students with working class background had difficulties in finishing their studies. It was argued that these students in particular needed a more streamlined kind of university, more strict courses, less academic liberty if you wish to put it that way. In fact the reform to a very large extent came about in response to demand from the students and at that time you must remember the student's organizations were very powerful and very united. I remember the present Rector of the University of Uppsala, Torgny Segerstedt, told me, that when the chairman of the student union came to his office in those years he really had to listen to him. It made a real difference for those who were a part of Swedish university politics at that time. However, what was once a very strong pressure from below, then became a policy from above, and then was resisted by the next generation of students.

Let me then make a simple remark, which concerns a concept of planning. I agree very much, of course, with the group report. I think that the effectiveness of centralization depends only to some extent on what goes on in the central authority; it depends mainly on the quality of the characteristics of the basic units and their climate. How can one possibly decentralize power unless out there, in the decentralized basic units, there is an involvement, a commitment to take responsibility for the various tasks that they now have to consider? But from a "Marxist" point of view, the question is whether the climate really should be defined from the values, incentives and satisfaction of leadership. More important than value climate are the social relations of academic production. How can you possibly influence, without taking into account what's really goes on inside the units, what are the basic processes? I think that in certain departments, in certain periods, you have an incompatibility between these processes. Some of these we have to live with; there will always be some incompatible aspects between teaching and research.

Torsten Husén has also remarked that there are some incompatibilities which are unavoidable as regards certain types of research of a sectorial nature where you expect a certain outcome, and some of these incompatibilities we have to live with, while others should be skillfully eliminated by changing the relations of production. And just consider the kinds of conflicts between various people that emerge as a result of different conceptions of the meaning of science. They must be dealt with, I think, by creating for instance cross-paradigmatic seminars, and here the group has summarized these conclusions. This is an institutionalized way of dealing with these very basic incompatibilities. Now, I cannot avoid also being somewhat academic. Let's make an academic distinction. We speak about collective intelligence, as regards the outputs of higher education. Well, I think this is a contradictio in adiecto, a self-contradicting concept. Intelligence by definition is something secretive and cannot be collective because then of course the secret gets out. I think in essence what you have been referring to is not collective intelligence but collective intellect. Intelligence is a kind of information gathering, which helps to find out best means to carry out certain things. Intellect is a more strategic kind of information seeking. It helps to give you a kind of conceptual framework of the world, of the situation, and I think perhaps the term intellect, collective intellect, would be better than collective intelligence.

Torsten Husén

The National Board, the NBUC, is indeed challenged in terms of the research and development functions. I think we don't need much imagination to anticipate this and out of the new traditions created by the legislation that has been passed over the last few years, this function will gradually become more and more important. And this has to be seen in connection with the particular tradition of this country which Maurice Kogan pointed out, namely the role of the social sciences in relation to educational policy and planning. I think that this kind of service function, performed by the central agency, will therefore under these conditions now become increasingly important. It is difficult to single out here one or two topical areas that one would recommend as particularly worth-while for research. Let me quite arbitrarily, and this is my personal opinion, point out this. In the first place, I think it would be very much worth-while pursuing over the next few years what happens in what Martin Trow has called "the private lives of the universities", and not least in its basic units. What has happened in the system of higher education is in a sense this, that over a very short period legislation has been passed with the assumption that there would be a change almost over night. If you compare this with changes that took place in the Swedish school system, you had in the 1940s two different commissions or committees of inquiry. Then the parliament passed legislation on a pilot period, where a pilot program had to be launched. And on the basis of the pilot program one would then come up with a revised system. Such a procedure has not been used in the area of universities, where instead after some four or five years to inquiry and after the reports had been sent out for evaluation of various bodies and organizations, the legislation was drafted and the new system was passed by the parliament. After that followed additional legislation on the implementation of it a couple of years later. In a system like the one of the universities, one couldn't expect things to change in the way that is anticipated in the legislation, and therefore there are ample reasons to suspect, that there will be quite a gap between the public life, in this case what is assumed in the legislation on the one hand, and the private life, whatever goes on on the other hand. I am giving this very sketchy background in order to amplify what I think is important to realize, namely that in a traditional system as the one of the university, one has to be very aware of what kind of actual changes that have taken place and what the effects actually have been. I am saying this because I know also that a kind of accompanying evaluation project is now going on. Now, I would also plead for a study, perhaps by the case study method on the liaison between researchers, planners and policy-makers, and how this actually occurs. This is a rather unique situation in this country where so many liaisons traditionally have been created not least through the governmental committees of inquiry between planners and policy-makers on the one hand and researchers on the other. But in order to create more of a common frame of reference in perceiving the role of R&D in this case on higher education, I think it could be worth-while to look more in detail, more concretely, at how this actually occurs, what kind of misunderstandings that are most common, and how these can be avoided. Finally, since we have so many of our colleagues from abroad and I like to see their role here as the one of being our mirror, it would, I think, be of great value if they could give their views on some of these issues.

Olof Ruin

Two short remarks on what Ulf Himmelstrand and Gunnar Bergendal have said.

My remark to Ulf is of a somewhat nostalgic nature. It concerns the question of student politics in this country. Historically the student unions were very strong indeed. They negotiated with and put pressure upon the central authorities. In today's university life they have been succeeded by other groups in society , particularly by the trade unions. But did those who were spokesmen for the students really reflect the opinions of the students? That is another question. Many of us middle aged people who are here now are former student politicians. In our time we pressed for a policy that in the late sixties produced the hotly debated UKAS reform. I wonder whether those who elected us as their representatives really had the same opinion on the structuring of studies as we had.

My second remark is directed to what Gunnar Bergendal said. He raised the question: how do we now in our all-comprising higher education system obtain guarantees for high quality research? A willingness to try to preserve centers of such research is of course a policy issue. But if we accept such a policy - and I think it is clear that we want to preserve a research of that type - it is an important issue to study whether conditions exist that can promote such research. I am particularly thinking about the consequences in this respect of our new decision making structure. It cannot be emphasized strongly enough how decentralized this system now has become. It is more decentralized, I think, than many of us expected it to be.

Of course it is too early to say anything definite about the consequences for high quality research of the present decision making system. Among other things I am thinking about the effects of the involvement of local politicians. Is their involvement - they sit on the board of the universities - going to be detrimental or favourable to high quality research? The same question can be asked as to the involvement of representatives of trade unions and other interests. This is an issue area that has to be studied with an open mind. Research in the field is necessary.

Now I want to go back to an issue that we discussed rather extensively in our group. That is the position of the center in a decentralized system of our type. In our society we tend to regard one of the functions of a center - regardless of what sector we are thinking about - to support the forces that tend to be weak on the lower level but that we think ought to be strong in the interest of society as a whole. Historically in the sector of higher education it has been the task of the center, in accordance with a nationally approved policy, to press, for example, for equality of chances and for a democratization in the decision making. The forces at the bottom of the system have seemed to be reluctant to move in the desired direction towards more equalization and democratization. Maybe the situation now is going to be reversed, that is, the spokesmen for quality research at the bottom cannot any longer muster enough support for their views. In case the nation as a whole regards it as important that we shall continue to have quality resarch inside our higher education system, then of course it will be a very important function for the center to see to it that this will happen. This would constitute to some extent a change of direction of an agency like NBUC as a natural consequence of a new power distribution at the bottom and new national priorities. I repeat: a central agency has always to lend support to forces that are weak at the bottom in case it is in the interest of society as a whole that they should be strong.

Lennart Levin

Before leaving the floor to Ulf, I would say, as a kind of admonition from the chair, that it would be very interesting to get a comment from Edmund or somebody else on the question brought up earlier by Gunnar Bergendal, on various types of knowledge. It would be interesting to get the opinion of Kjell Härnqvist or some other in group 4 on the contradicting terms mentioned by Ulf Himmelstrand and it would again be interesting to have a comment by Martin Trow on what he actually meant some days ago, when he said that the whole system has to be more adaptable to uncertainty. An answer to that question would relate to a number of comments being made around this table.

Ulf Himmelstrand

I found it very interesting to listen to Olof Ruin's remarks about the tradition of Swedish centralism and its special concern for the weaker groups of society and for welfare policy. The aim of central agencies is often to re-distribute resources, and in this sense some people may think of the present decentralization as a possible danger. Weaker groups may now encounter greater difficulties, particularly at a time when we have to make cut-downs for financial reasons. Perhaps one should discuss research about the role of centralism, historically, in various sectors of the Swedish society. I agree about the very high degree of centralization in the student movement, but I should say that I was not a student politician myself. I was rather a part of the grass-roots of a social democratic student club and these demands were discussed very intensely at the grass-root's level as well.

Ference Marton

Mr Chairman, on the behalf of group 4, I should like to make a short reply to Ulf Himmelstrand. Now as to the concept of collective intelligence unfortunately the question is very peripheral in this discussion. Now, I thank him for a linguistic improvement. It might be so that collective intellect is a better expression than collective intelligence. Still the words are to some extent arbitrary, so if you define the way you use a word then the word will obtain the meaning. But as I now have the opportunity to say a couple of words about this concept, I should like to point out once more our intention in using this concept and what I think was a main point in our group. At this meeting it is a lot of discussion of, well, different administrative arrangements in the university and the research needed as a base for administrative efficiency. Our starting point was that we haven't a sufficient knowledge of the real effects of the university and of higher education. And if you don't know the effects, then it may be difficult to make the decisions as well. Now, if you look at the hand-out from group 4, then you see a straight line between student input and individual output. This line refers to two studies carried out in Göteborg and Umeå intended to describe the long-time changes that take place in the students. I think the main result in our group-work was to point out an entirely different possible outcome of higher education. Not on the individual level. It is an outcome, a result which is not mediated directly by the students participating in the studies, but by influencing the thinking of the people, the laymen, the general population. And we think this is a very important aspect. Higher education is of course not the only agent in society which influences people's thinking about the world around them. So we think that it is a fairly interesting question, which role higher education has by shaping people's concepts and ways of thinking. This is one point. But if I might go on, I should like to draw your attention to another possible function of higher education and research which was advocated by Bengt Gesser, and which I think the whole group found very intriguing. The idea he put forward was, that certain functions in society like the upbringing of children, taking care of dying persons, taking care of alcoholics etc., which traditionally have been a part of social life may change from being a social practice, an aspect of everyday life. Functions may be taken out from their social context and made to professional questions. And moreover, says Bengt Gesser, this means not only that you are creating new professions, new specialities, but in this way you define what it takes to think in a rational way. About for instance upbringing children or taking care of dying persons, because there is a certain speciality, there are courses etc., so when people in the general population are discussing such matters, they have to take into consideration what is accepted as rational thinking and rational thinking is defined then by higher education. Now, this is something quite different from the usual way of thinking of the effects of higher education. I think this is an interesting aspect and we should take it into consideration when we are discussing the role of higher education in society.

Edmund Dahlström

I think what Gunnar Bergendal speaks about is a very important issue and I think it relates to a very crucial point. When we change to a more popular higher education system, opening up for all kinds of students, and emphasizing recurrent education, what should be the content, what should the teaching deal with? In the discussion of the new types of higher education, one also asks what is science, what is knowledge development, and what should be the content of the higher education courses. The elite university trains professions. This means that the social structure outside the university becomes professionalized, the professions take over functions which, as was mentioned here previously, have been a part of ordinary life. It means a differentiation, it means also taking away from people functions that they were more responsible for before. And one could discuss various visions of the future, one being a sort of meritocratic structure and the other being a more populistic structure. In the social sciences, for example, I would say that we should seriously consider the role of the university. To what extent should we continue with a traditional knowledge creation to keep a distance towards the social practice, the practical knowledge? To what extent should we increase introducing everyday practices as something we should seminate and have as a part of our university teaching? We have a legislation saying that work should help make life meaningful for workers in various social positions. Who should decide this? We can imagine this as a function for the psychologist. We can train psychologists as experts on problems of psycho-social standards in working life. But another alternative is that this is an issue for the workers themselves, that it is made a part of the union activities and is brought into the union training programs. If you look at the training programs that now are developed in working life and in industry, you will find that they cover quite a lot of it. But they find difficulties in mobilizing people and functionaries in the unions, and so on for this kind of knowledge development. And I am sure that the unions will favour solutions that exclude further professionalization. So here, I think, is a central discussion that is coming up in more and more areas today.

Lennart Levin

I took the liberty to put myself on the list. I think that what Ference Marton said was not meant as a criticism towards the theme chosen for this particular conference. But in some way it implies some criticism towards the way in which we look at the role of higher education. We, as it were, single out higher education as an object with its own properties. So my question will be: can you device another conference and indicate the theme or title of that conference?

Edmund Dahlström

The National Board of Universities and Colleges plans for next November a conference, a research conference, around the whole problem of higher education and the labour market, where the issues of socialization, division of labour, the organization of work and the organization of education will be treated in a coordinated way.

Torsten Husén

I would like to make comments around the theme of diversification that was brought up in various contexts, and dealt with by Martin Trow in his paper. Edmund Dahlström has earlier today said that there are two strains one can observe, one more populistic and one more meritocratic, and that we have to choose which one to emphasize particularly. Without elaborating too much on this, I dare to be perhaps a little bit sceptical about this. There are so many indications that if you want to achieve within the system some quality products, the students or the research, then it seems more or less unavoidable that a certain meritocratic strain takes over in one way or another. It is interesting to look at the development in various social and economic systems, how this has emerged. It is, I think, particularly interesting to look at the USSR, where you had at some stage a rather marked populistic strain in terms of making opportunities available to a maximum number of people to get into tertiary education. Long before this was done in Western Europe they created a system of correspondence courses which was much more elaborate than in any country in Western Europe, and a system of evening courses. And particularly such courses that were closely related to the individual careers or the individual competences that could be put into the educational organization. But the interesting thing is to see how highly diversified the system is with regard to prestige, status and also selectivity. If you take the Moscow State University where they admit perhaps one out of five highly qualified applicants, this is a place very high on the status scale. It is like the Tokyo University in Japan. Recently, the Japan Times reported that nine out of ten positions in the Foreign Office in Japan were taken by graduates of Tokyo University. And you will find a similar tradition in the 'grandes écoles' in France, which I had an opportunity to look at fairly closely when we had a review of the French education in 1969-70. My point is simply this, without, as I said elaborating further on it, that the meritocratic strain is more or less inherent in modern industrial sociaty. If you want, as they seem to do now in the People's Republic of China, to have a major thrust towards modernization by means of massive mobilization of science and technology, then, more or less unavoidably, you will have repercussions on the educational system. They are also making it more meritocratic.

The other comment refers to the problem of the private lives of the universities. I think you can find everywhere in the legislatures and among the top administrators, that there are certain conceptions about what it looks like at the grass-root level, and in this case, what goes on in the life on the arena of the basic units - conceptions which differ considerably in many respects from what actually goes on there. And we have had that experience in Sweden on several occasions. We have had reforms which were intended to have certain effects, but actually, when you began to look at them, you found that the effects were quite different from the ones originally anticipated. Therefore, I think one should in the situation where we are now in this country be particularly aware of creating instruments in order to assess what this private life actually looks like.

Martin Trow

I want to say something about the deep involvement of the R&D community in the policy process, which several people here touched upon in the discussion. Maurice Kogan noted how very many pople in these two communities are deeply involved in policy processes. It is a strength and it is a weakness. I don't know if you have heard a sentence from Dr Johnson (Samuel Johnson 1709-83) that "the prospect of hanging greatly concentrates the mind". So it is also with policy. It really makes one very thoughtful, responsible, and especially as an American I appreciate the strength of policy relevance. But there is also a weakness. The weakness I think is a tendency to the premature resolution of intellectual controversies in the service of the consensus decisions that can be made the basis of a policy. This I understand very well, and the needs of policy makers. They are not very interested in those controversies, they want one general, central tendency. And I think that the price for that central tendency is a certain quality in the policy process. I think perhaps that we tend to separate research into two categories. One is a kind of basic, pure research which addresses theory, where we don't raise the issue of relevance. On the other side we have applied research, sectorial research, which does address policy and practice, and some of you may have heard that you are a specialist on research on practice. Now, I think that what seems to be needed is an intermediate form of research, which is not pure, does not only address theory. It is applied and addresses itself to practice, but will not necessarily come to bare on practice very quickly, since it recognizes that it is not yet ready to be acted upon. There is a kind of practice-oriented research that assumes and recognizes that its findings are provisional. I think that applied research of this kind needs a freedom to be wrong. And you can only have that freedom if the people doing it, have in a sense the assurance that what they find will not be quickly introduced in the policy process. That is a very good thing for policy makers to allow, it seems to me. When one thinks that one's findings will be put into practice, there is a pressure for a certain kind of caution, you might say an inappropriate degree of responsibility. Therefore it seems to me that what we need is a certain kind of intermediate research and in that realm to promote also research controversies and discussions among people doing research. Through such continuing controversies I think that a kind of applied knowledge grows. It is in a way a search for truth by the adversary process, rather than through the research process. So, it seems to me there is an organizational implication here. Even in the short time, that I have had the privilege to visit your country and watch the developments here, I see the emergence of an intellectual community centred around research and development in higher education. But I also wonder if in the future a part of this community, or maybe it is the same community in a slightly different way, emerges with an independent life, an intellectual community which begins to set its own agenda, begins to engage in its own arguments and provides the home for ongoing policy-related studies, which are not always keyed to the government's agenda, to its priorities and to its time-tables. And that community, I think, will have its own informal communication system. So the question is, can the Swedish state support policy-relevant studies, which are not keyed to its own concerns and its own time-tables and also take a risk that some of the findings of this work would be used also at the service of policies that the government of today is not supporting.

Gunnar Bergendal

I want to add some remarks to the discussion between Edmund Dahlström and Torsten Husén. Edmund said that we have to see various visions of education and working life, meritocratic or populistic. And as I understood it, Torsten said that there is no possibility to enter on the populistic vision. Now, I thought there was a short-cut in that answer, and I should like to develop that a little. If we start with the populistic vision of the future working life, then we have to ask quite a few questions about what that means. For instance, and that is part of what Edmund is discussing, which are the mechanisms of innovation in working life in society? Will they be mainly hierarchical according to a pattern from the centre to the periphery, or will they be mainly participatory in some way? Will they be based more or less on everyday knowledge or will they mainly start from scientific knowledge? We have to analyse the employment perspective that we should take as point of departure for the analysis of the role of higher education. In that analysis there are many questions to ask. What is the place in this new employment perspective of scientific knowledge development, and of high quality research? What is the place of, say, practical knowledge development? What is the place of artistic knowledge development? And what is the responsibility of higher education and higher education institutions in this very country for these various kinds of knowledge development? You have to ask questions as to the consequences for admission policies. Should we have an open admission policy, should we have a closed policy, what qualification rules, what selection rules? What should be the organizational structure of basic education, which corresponds to that new employment perspective? It is not at all obvious, that in that analysis high quality research will be ruled out from the higher education landscape. I would say that a true good society cannot be served by a higher education system which is not highly diversified. This whole analysis, I think, is extremely important and as yet very little has been done to start in the new needs for a policy of employment for our future society and to draw conclusions and to make alternative policies for education. And this, I think, is one of the central research activities for instance for the NBUC and for other educational and employment agencies in this country.

Anthony Becher

Well, my remarks are on a rather low level, rather than a more philosophical, and I maybe changing the tone of this conference. It seems to me there are already two quite interesting things coming out of the discussion. One has been a kind of experiential thing, that the discussions certainly involve people both as researchers and as administrators, and I think that the kind of dialogue between those different perspectives has worked. The second outcome I think has been the products of the groups and that would be something that the colleagues of the National Board would be looking at it more in detail. I will pass that in this discussion and just give my support to the kind of provisional research that Martin was talking about quite recently, but which I would call differentially applicable research. By that I mean that there is a strong attention to certain features of a situation, without going on to say "and therefore you should do so and so", but rather going on to say "given this, what should you do in your particular circumstance?" This is a way of describing one's findings in terms, which the people in that situation can very readily make direct use of.

Ference Marton

What I want to say is related to Gunnar Bergendal's remarks and I should like to address myself to Torsten Husén. He mentioned some universities like in Moscow, Tokyo and Paris and as I understood it his point was that those universities are characterized by firstly high status, secondly high degree of selectivity, and thirdly high degree of excellence. Now, I think there was a tacit conclusion, a conclusion by implication, that we should follow these examples. My first question is: did I understand you right that there is such a conclusion by implication? The second: on what basis do you say that? The third question: is there a close link between high status, high degree of selectivity and high degree of excellence? And the forth question: does Torsten Husén remember his own review on Urban Dahllöf's book on differentiation within the primary school, when Torsten Husén pointed out that, as from the point of view of efficiency there is no question that differentiation is a good solution. But there are other aspects, namely ideological-political aspects, and the problems should be seen also from such points of view. How is your standpoint in relation to higher education related to your standpoint to the school education ten years ago?

Torsten Husén

I must say I am very intrigued by this question of meritocracy versus equality. That is a dilemma, and I must say that this came up after the review you referred to, which I wrote in December 1967. The point I was trying to make here, and this answers one of the questions, is that there is an association between high status, selectivity, and excellence, and there is a kind of circular relationship between them. And I can give you no better example than Tokyo university, where once you have been admitted, you are in the establishment, so to speak. What then happens to you during your years there doesn't matter so much as the thing of having succeeded to get into it. The problem here, I would submit, is somewhat different if you take the basic schooling. What I was referring to in the review you mentioned, was of course the differentiation problem in basic schooling in this country, a debate in which some of us were involved in various respects, both as empirical researchers or as ideologists or whatever. On the other hand we have the problem that has concerned me quite a lot in recent years, namely the problem of quality research. If you take the present situation in Sweden, where in various quarters now concerns are expressed by politicians in the parliament, by representatives of the National Board of the Universities and Colleges, and by others on the receding enrollment in science and technology programs. Until very recently the institutes of technology in this country were highly selective institutions. And we have had since then a subsiding trend both in terms of number of applicants and in terms of the quality of those who have been taken in. At the same time, considering the present export prices in Sweden, lots of politicians have rushed on to the scene and begun to talk about the necessity for a small country like ours to compete on the world market by quality. And I think there are certain connections here that one should realize, but how this should be done is another matter. Finally, I did not mean by implication that we should follow the example of the 'grandes écoles', or the Moscow State University or the Tokyo University. I would be far from being accused of proposing the tough system of admission as they have for instance in Tokyo, where so and so many commit suicide every year because they are not succeeding in getting in there. But I think we should not close our eyes to the realities here, and what I was trying to say, without, as I said, elaborating on it, is that there is an inherent strain of meritocracy in the highly developed industrial society, that is more or less independent of the existing social or economic order.

Hendrik Gideonse

The dialogue has been fascinating. I have been reminded on more than one occasion of sessions of improvisation on music that I used to participate in at an earlier stage in my career. As a theme arises everyone else participates in one fashion or another, and that results in another theme, and the participation changes. I feel a little bit uncomfortable, because I don't know what I am talking about, but I know the direction I think I am going and it is difficult to talk when you don't know. So I want to knit together some things. I want to knit together Maurice Kogan's comments about multimodel and sociology of knowledge--and the thing that Dahlström had to say about scientific knowledge and practical knowledge. The notion that Esbjörn Johansson and I discussed last night about people who live several roles at the same time in society and how they have some bridge between, and understand different images of that society. Dahlström's comments, which I applaud, about similar kinds of things and Martin Trow's notions that we are all experts, when looking at internal things that one has access to directly. Picking up one or two things that you said, Gunnar, about the different kinds of knowledge development and indeed the extent to which the university is a place for hierarchies with respect to knowledge development, which are quite sharp and distinct and may not admit of other modes that are not in as high status.

And Ference Marton's comments about the extent to which social practice, when it changes to professional and becomes rationalized, becomes different. We understand it in a different way. I knit all those things together because there is a theme running through our dialogue. And it has to do with research and it has to do with epistomology, it has to do with ways of knowing, ways of understanding. And I make a distinction between that, it is common sense to say I know so and so, but I don't understand. And one of the things that we are trying to do is not only to make decisions and establish policies, but to enhance the meaning in our life and the lives of others. I'm thinking very carefully about what we mean by research, whether we are focussing on process or outcome, and if we focus on outcome as knowledge, what we mean by that and how many other ways we therefore need to think carefully about admitting in the process of knowledge development. So there is a sense in which one could get at a meta level here, not just addressing research with respect to policy, but also other ways of knowing with respect to research that may very well tie back to some things that are at central concern here.

Dorothea Furth

I will also try to look at the Swedish situation from an international perspective. The first aspect is in relation to the studies of decision-making processes in university systems or higher education systems. I have been involved in international comparisons of decision-making structures in university systems. You could divide countries ideally in two groups, or at least arrange them on a line where there would be two extremes. The first one would be countries where the organizational frame-work is really very broadly defined. There are certain levels being established, you have the central level or the institutional level, and the basic unit. But there are not very straight or detailed roles and procedures about the decision-making process. There is a broad frame-work, but much of the decision-making is really on the basis of very informal networks, of unspoken rules or hidden rules which are really respected. But you know that in these systems, I would say England and to some extent the United States, you cannot study the decision-making process through books. You have to see really what happens in reality and how people interact informally. Now, on the other hand you have countries which are very highly legalistic, where everything is set in rules, in strict procedures of how each level has to relate with the other one, how within each level there are even procedures for how you have to interrelate. I would say that the German and even the French system would correspond to this highly legalistic, and formal structure. So you know that when you go to, for example, France and ask "what is your decision-making process", they will perhaps provide you with a stack of books about the constitution, the rules, procedures and then they would say: Well, you can look at these books, but really what happens is a completely different thing.

And we are going to explain how we manage to the extent that very often the informal network is sometimes institutionalized, even if it doesn't appear in the books. Now, I was wondering where Sweden fits into this context. One gets the impression from the outside that there is quite a structured decision-making system, where there are considerable sets of rules and procedures. And when I ask privately or in informal conversation, well, how does the relation between one level and another take place, usually the response is, well, the procedures, the formal procedures are such and such. And there is no second reply saying that we in reality go about in a different way, we have created informal groups. I really haven't grasped very well if really there is a complete following up of these rules or if there is a very important informal network. What would be interesting is to see whether there are informal ways through which the basic units or the institutions can influence the center by going around certain of the established levels or institutions or boards. I think that one of the ways in which the basic unit can influence the center is through this remiss procedure, which is so fascinating to see from the outside. And I would be very interested in how this remiss procedure is functioning in Sweden. Has it been too much institutionalized now, I mean, this I think would be quite an interesting area of study at least seen from an international perspective.

The second issue I wanted to touch is on this problem of diversification. We have studied quite a lot the problem of establishing either comprehensive universities or having binary policies or pluralistic policies. One of the fears, of course, in creating unitary frameworks or comprehensive universities is the danger that highly prestigious and traditional institutions, such as the university, will in one way or other contaminate the non-university sector, and the non-university sector will start adopting the norms and procedures and values of the traditional academic life. This is not nearly by governmental policy, but this happens because students and professors in these institutions want to upgrade their institution and start imitating the highly established universities, or prestige universities. I am wondering whether Sweden is in the same situation as Germany or not? One thing which has happened in Sweden, which hasn't happened so much in Germany, is that before the integration between universities and non-universities the Swedish university has diversified itself, and not only has diversified itself, but if I understand it correctly, much of its elitness has been deluded in the past years, so it is not such a strong counterpart as it used to be. I would like to have a reply on this. What I am thinking of is, for example, through the admission rules, through the access rules, now Sweden has single courses, degree courses which are professionally oriented, degree courses, which are leading to research but in a way it is elitness that has been deluded. Now, if there would be a policy to strengthen the research component and strengthen excellence within the university, I think one should at the same time try to find what Gunnar Bergendal said, try to look for excellence within the other types of institutions, so that the excellence adopted by the graduate institutions is not filtered into the non-academic institutions. And one way of doing it, which has been in a way the Swedish line, is not to insure a diversification or an academic division of labour in which each institution has a role, but to insure diversification within different institutions.

Olof Ruin

I asked for the floor just when my friend Martin Trow made a very interesting statement about organizing research. When we at the National Board of Universities and Colleges now discuss different principles for structuring basic units as far as research is concerned we usually make a distinction between three different types. One is the unit based on a traditional discipline. These types of units are by all probability going to dominate also in the future; they are part of a worldwide international scientific community. A second type of unit is the one that is based on a specific problem or policy area. A third type, finally, is one that we have began to discuss in the aftermath of our higher education reform. All study programs should in one way or other be connected with research. In cases where there is no connection whatsoever we might have to construe new research units tied to such programs.

The second type of basic units here mentioned is the most interesting in this connection. I can very well visualize that in the future we might have basic units concentrated around different problem or policy areas at our different universities; at some universities units that concentrate on labour market policy, at others units on social policy, higher education policy, etc. These units, focusing on specific problem or policy areas, should of course contain both research that can be classified as basic as well as applied. Furthermore it is important to stress that the issues that are taken up for reseach should be of two kinds, both those that are tied to the national agenda as it is conceived, as well as those totally independent of such an agenda. It is of course of importance for a central agency responsible for a problem or policy area that the sector-oriented research that is undertaken deals with current issues of immediate use to the agency in question. But it is also important that research is going on, that questions existing basic assumptions, or has very long range perspectives.

Edmund Dahlström

First, I'm glad that the conference brought out what Martin Trow calls the private life of the universities as an important object of research, using also untraditional methods as for example biographical material, I think that is very important. My second point is that a kind of intermediary form of research, I think, is important. I have for many years been a member of the governmental advisory committee on science policy, and my general experience is that it is necessary to have sectorial R&D funds. There is a need of knowledge development of a scientific character for the various sectors of society. As to the third problem I agree completely with Torsten Husén as to the meaning of this conflict between on one hand the values of democracy and equality, and on the other hand meritocracy and professionalism. But this is a sort of long perspective, and an interesting question is how the structural changes in the economy are reflected here. There is also a political problem about what will happen on the global scene. The short problem is to what extent the university should go in and try to attach to the kind of practice knowledge that is available and seek new and broader ways of research. If the university doesn't do it then other parts will do it, as for instance (in Sweden) the working life center and places like that, and this is a research policy issue. At the same time there is an issue for higher education to what extent it should be related to the general population or related to the professions. I think here is an issue for decisions, which have to do not only with the universities but with the political community in general.

Hans Löwbeer

I think that Dorothea Furth should not be allowed to leave this conference without having an answer to her questions. There is a relatively great amount of law and order in the procedures for decision-making in Swedish administration, including the universities. And it is worth noting that in the new type of organization there are more interest groups than before. You have also the employees, the non-teaching employees, as a new influence group in the decision-making organs. And you have also in many of them the representation of the society in the neighbourhood, which I think is a check, which means that there could not be very much room for an informal procedure for decision-making beside the regulated market. The amount of lobbying in the Swedish system of higher education is also rather limited compared with other countries. Your question about the power or the status of the new university compared with the old one, gives me a possibility to add to what Torsten Husén said before about reform strategy. He pointed out that in the field of the primary and secondary schools we had a long period of pilot experiments before we embarked on the more definite new organization. I should say that we have had experiments also in the field of higher education. There was a fairly long period of pilot experiments parallel to the U68 inquiry work and this, I think, is just an application of the Swedish model for the work of governmental commissions or for this kind of inquiry. Such work is very often, at least in the field of education, connected with parallel experiments. So I mean the finally decided changes did not come as a surprise from the point of view of practice and practitioners. To this can be added that the organization with governing boards at the university level, or at the institution level to speak with Becher and Kogan, including laymen nominated partly on a political basis, has, as far as has been possible to observe so far, strengthened the power, the influence of the university; its influence on other parts of the society. That is quite obvious, and it might in fact develop into a problem.

Lennart Levin

Well, it is my task to conclude the session now. As you know the discussion material will be worked out before publication. I think the rapporteurs will have an interesting job and I wish them good luck in summarizing the conference. One of the objects was, as you all know, to continue and deepen the dialogue between researchers and administrators and I was very glad to hear Tony Becher say that the dialogue between the different perspectives has worked well during this conference. Speaking now for the R&D unit, I would like to stress that it has been a very enjoyable conference. I very much appreciate that you have made my job as chairman a pleasurable and easy one. In closing this conference I would particularly thank those of you who have taken trouble to come here from far away places. It seems to me as if we all share a feeling that this conference has been a rewarding and worthwhile one. Thank you, everybody.

VI APPENDIX

CONFERENCE ON

RESEARCH INTO HIGHER EDUCATION: PROCESSES AND STRUCTURES,
Dalarö, Sweden, June 12 - 16, 1978

Programme

Monday, 12th June	Participants arrive; dinner
Tuesday, 13th June	
7.45	Breakfast
9.00 - 10.30	Introductory speeches by Mr Hans Löwbeer, Chancellor of the Swedish universities, and Mr Lennart Levin, R & D unit. Theme 1: Higher Education as a System Presentation of papers by Tony Becher and Maurice Kogan Ulf Himmelstrand Questions, comments by lecturers
11.00 - 12.00	Introduction to group work
12.00	Lunch
14.00 - 17.30	Group work
18.00	Dinner
19.30	Group work
20.30	Refreshments
Wednesday, 14th June	
7.45	Breakfast
9.00 - 10.30	Theme 2: Role of Higher Education in Society Presentation of papers by Martin Trow Yrjö-Paavo Häyrynen Questions, comments by lecturers

Programme (cont.)

11.00 - 12.00	Group work
12.00	Lunch
14.00 - 16.30	Group work
17.00	Departure by coach, excursion to Stockholm, Skansen
19.00	Dinner at Solliden

Thursday, 15th June

7.45	Breakfast
9.00 - 10.30	Theme 3: R & D Organization and Planning Presentation of papers by Edmund Dahlström Björn Wittrock Questions, comments by lecturers
11.00 - 12.00	Group work
12.00	Lunch
14.00 - 17.30	Group work
18.00	Dinner
19.30	Plenary session: Reports by Group Chairmen
20.30	Refreshments

Friday, 16th June

7.45	Breakfast
9.00 - 12.00	Plenary session: Concluding discussion Closing of conference
12.00	Lunch
13.00	Departure by coach to Stockholm

CONFERENCE ON

RESEARCH INTO HIGHER EDUCATION: PROCESSES AND STRUCTURES,
Dalarö, Sweden, June 12 - 16, 1978

List of participants

From abroad	Work group
Anthony Becher, Education Area, University of Sussex, Brighton, England	1
Ladislav Cerych, European cultural fondation, Paris, France	1
Gerhild Framhein, European Centra for Social Sciences, Vienna, Austria	4
Dorothea Furth, OECD, Paris, France	2
Hendrik Gideonse, Dept. of Eduation, University of Cincinnati, Ohio, USA	5
Yrjö-Paavo Häyrynen, University of Joensuu, Finland	4
Maurice Kogan, Dept. of Government, Brunel University, Uxbridge, England	2
Jack Lindquist, Center for the Study of HE, University of Michigan, Ann Arbor, USA	5
Martin Trow, Center for Studies in HE, University of California, Berkeley, USA	3

From Sweden	
Kenneth Abrahamsson, R & D unit, NBUC, Stockholm	3
Carl-Axel Axelsson, Division Director, NBUC, Stockholm	4
Pär-Erik Back, Political Science Department, Umeå	2
Marianne Bauer, R & D unit, NBUC, Stockholm	2
Gunnar Bergendal, Teachers College, Lund University, Lund	2
Eskil Björklund, R & D unit, NBUC, Stockholm	5
Dan Brändström, Umeå Regional Board, Umeå	1
Lars Owe Dahlgren, Dept. of Education, Göteborg University, Göteborg	3

List of Participants (cont.)

From Sweden	Work group
Edmund Dahlström, Dept. of Sociology Göteborg University, Göteborg	5
Gun Ek, R & D unit, NBUC, Stockholm	-
Lars Ekholm, Ministry of Education, Stockholm	5
Sigbrit Franke-Wikberg, Dept. of Education, Umeå University, Umeå	4
Bert Fredriksson, Rector's office, Umeå University, Umeå	2
Bengt Gesser, Dept. of Sociology, Lund University, Lund	4
Leif Grahm, Committee for Regional Investigations, Stockholm	3
Sten Henrysson, Dept. of Education, Umeå University, Umeå	3
Ulf Himmelstrand, Dept. of Sociology, Uppsala University, Uppsala	1
Torsten Husén, Dept. of International Education, Stockholm University, Stockholm	3
Kjell Härnqvist, Dept. of Education, Göteborg University, Göteborg	4
Esbjörn Johansson, Dept. of Sociology, Göteborg University, Göteborg	5
Hans Landberg, Council for Planning and Coordination of Research, Stockholm	5
Jan-Erik Lane, Political Science Deptartment, Umeå University, Umeå	1
Lennart Levin, Division Director, R & D unit, NBUC, Stockholm	5
Bo Lindensjö, Political Science Department, Stockholm University, Stockholm	2
Hans Löwbeer, Chancellor, NBUC, Stockholm	1-5
David Magnusson, Dept. of Psychology, Stockholm University, Stockholm	2
Sixten Marklund, Department Director, National Board of Education, Stockholm	4
Ference Marton, Dept. of Education, Göteborg University, Göteborg	4
Yngve Myrman, Political Science Department, Stockholm University, Stockholm	1

List of Participants (cont.)

From Sweden	Work group
Jon Naeslund, Dept. of Education, Teachers College, Stockholm (observer)	1-5
Susan Opper, Doctoral student, Dept. of Education, Uppsala University, Uppsala (observer)	1-5
Rune Premfors, Political Science Department, Stockholm University, Stockholm	5
Dick Ramström, Dept. of Business Administration, Uppsala University, Uppsala	1
Erland Ringborg, Division Director, NBUC, Stockholm	1
Kjell Rubenson, Dept. of Education, Teachers College, Stockholm	4
Olof Ruin, Deputy Chancellor, NBUC, Stockholm	2
Karl-Gustaf Stukåt, Dept. of Education, Göteborg University, Göteborg	1
Birgitta Wistrand, Planning Commission member, NBUC, Stockholm	3
Björn Wittrock, Political Science Department, Stockholm University, Stockholm	5
Ulla Åhgren-Lange, Division Director, NBUC, Stockholm	5
Bertil Östergren, Adviser, R & D unit, NBUC, Stockholm	1

CONFERENCE ON

RESEARCH INTO HIGHER EDUCATION: PROCESSES AND STRUCTURES,

Dalarö, Sweden, June 12 - 16, 1978

Working groups

Group 1

Anthony Becher
Dan Brändström
Ladislav Cerych (chairman)
Ulf Himmelstrand
Jan-Erik Lane (rapporteur)
Yngve Myrman
Dick Ramström
Erland Ringborg
Karl-Gustaf Stukát
Bertil Östergren

Group 2

Pär-Erik Back
Marianne Bauer
Gunnar Bergendal (chairman)
Bert Fredriksson (rapporteur)
Dorothea Furth
Maurice Kogan
Bo Lindensjö
David Magnusson
Olof Ruin

Group 3

Kenneth Abrahamsson
Lars Owe Dahlgren (rapporteur)
Leif Grahm
Sten Henrysson
Torsten Husén (chairman)
Marin Trow
Birgitta Wistrand

Group 4

Carl-Axel Axelsson
Gerhild Framhein
Sigbrit Franke-Wikberg
Bengt Gesser
Kjell Härnqvist (chairman)
Yrjö-Paavo Häyrynen
Sixten Marklund
Ference Marton
Kjell Rubenson (rapporteur)

Group 5

Eskil Björklund
Edmund Dahlström
Lars Ekholm
Hendrik Gideonse (chairman)
Esbjörn Johansson
Hans Landberg
Lennart Levin
Jack Lindquist
Ulf Lundgren
Rune Premfors (rapporteur)
Björn Wittrock
Ulla Åhgren-Lange

CONFERENCE ON
RESEARCH INTO HIGHER EDUCATION: PROCESSES AND STRUCTURES,
Dalarö, Sweden, June 12 - 16, 1978

Discussion notes

Theme 1

Ladislav Cerych	The process of implementation of higher education reform
Bert Fredriksson	Swedish university departments
Jan-Erik Lane	Center for administrative studies: Program on higher education
Bo Lindensjö	U68 - The genesis of the Swedish higher education reform
Yngve Myrman	U68 - A study in the implementation of the reform of higher education
Dick Ramström	Influence and decision problems in the new Swedish university organization

Theme 2

Lars Owe Dahlgren	Conceptions of reality - A study of changes in university students
Lars Owe Dahlgren & Sigbrit Franke-Wikberg	Changes of students' conceptions during university studies
Sigbrit Franke-Wikberg & Sten Henrysson	Long-term effects of higher education - a longitudinal study
Leif Grahm	The role of education for change in society
Kjell Rubenson	The adaption of higher education to a system of recurrent education

Theme 3

Hendrik Gideonse	Model for educational research and development: 1985
Hans Landberg	Three aspects of R & D organization in higher education

CONFERENCE ON

RESEARCH INTO HIGHER EDUCATION: PROCESSES AND STRUCTURES,

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Information bulletins: "R & D for Higher Education"

1976: 7	The university as an organization: system and enviroment (J-E Lane)
1977: 3	The creation and support of a research community on higher education (M Trow)
1977: 5	Researchers, practitioners and the development of social science (E Dahlström)
1977: 7	U68 - a study in the origins of the reform of higher education (B Lindensjö)
1977:11	U68 - a study in the implementation of the Swedish reform of higher education (Y Myrman)
1977:13	The adaption of universities and colleges to recurrent education (K Rubenson)
1978: 4	The Swedish programme for research into higher education (E Björklund)
1978: 5	Practitioners and social scientists - planning and utilization of social science (E Dahlström)
1978: 6	Long-term effects of higher education (S Franke-Wikberg)
1978: 7	Conceptions of reality - a study of change in university students (L-O Dahlgren)
1978: 8	Research and development in higher education: An overview (L Levin)